Medical Times

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Government Medical Corps

THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE.

JOHN W. TRASK, M. D.
Assistant Surgeon General, P. H. and M. H. S.
Washington, D. C.

The Public Health and Marine Hospital Service is a bureau under the Treasury Department. The head of the service is Surgeon General Rupert Blue, under the Secretary of the Treasury.

To this service is intrusted the general public health work of the federal government. Through it the government cooperates with and assists the health authorities of the individual states, collects statistics of the prevalence and geographic distribution of disease, suppresses epidemics, investigates infectious and contagious diseases, carries on research in matters pertaining to the public health, maintains the national quarantine, performs the medical examination of immigrants, regulates the manufacture and sale of vaccines, serums and antitoxins and furnishes medical care and treatment to various branches of the Government service and the sailors of the merchant marine.

The service has at the present time 444 medical officers stationed throughout the United States and in foreign countries.

Scientific Research.

One of the important functions of the service is the investigation of contagious and infectious diseases and matters pertaining to the public health. Under this head comes research work in regard to diseases and sanitary problems of both national and local importance. This work is carried on both in laboratories and in the field.

For that part of the work which can be done in laboratories, four have been established, the Hygienic Laboratory at Washington, the leprosy investigation station at Honolulu, and laboratories for the study of plague at San Francisco and Seattle. There are also small but complete and efficient portable laboratories which can be sent wherever they are needed for special field investigations, and also clinical laboratories at the service hospitals.

The Hygienic Laboratory was originally established at the Marine Hospital in New York, in 1887, and was moved to Washington in 1891. The laboratory includes 4 divisions, each of which in a way constitutes a laboratory in itself. There are the divisions of pathology and bacteriology, of medical zoology, of pharmacology, and of chemistry. This arrangement is advantageous because by it each division can carry on work along its own special line and in addition co-operate with and render valuable assistance to the others.

The law under which the laboratory is organized provides for an advisory board, the members of which shall be skilled in laboratory work in its relation to the public health, to direct in a general way the work carried on and to give special advice in regard to specific matters. The members of this board are Professors Wm. H. Welch, Victor C. Vaughan, Simon Flexner, Wm. T. Sedgwick, F. F. Westbrook, Lieut. Col. W. D. McCaw, U. S. A. Surgeon; C. S. Butler, U. S. N., Dr. A. D. Melvin, of the Bureau of Animal Industry, and Passed Assistant Surgeon J. F. Anderson, Director of the Laboratory.

Work is done not only in the laboratory, but men from there are sent to various places to investigate special problems.

The chief of the laboratory division of medical zoology, Dr. Charles W. Stiles, has been largely responsible for our present knowledge of the prevalence of hookworm disease in this country and its importance as an economic and social problem. He has shown that in some sections of the South the disease is so prevalent that in certain of the schools over 90 per cent. of the pupils are infected. So clearly has he demonstrated the importance of this disease that the health authorities of the Southern states have taken the matter up and are carrying on an active campaign for its eradication.

The service hospital at Wilmington, North Carolina, has been made a special station for the study of intestinal parasites, and patients harboring such parasites are admitted to the hospital for treatment and observation.

For four years a detailed study has been made of the causes for the unusual prevalence of typhoid fever in the District of Columbia. This has been valuable in showing the various factors in the spread of this disease in a city. When the investigation was started it was expected that some one factor would be found to be causing the cases which were widely and fairly evenly distributed throughout the city of Washington. It has been ascertained that many causes contributed to the spread of the disease, among the most important of these being direct contagion by contact with typhoid fever patients or with articles soiled by them; and the use of infected milk. The same factors are undoubtedly active

in all large cities and therefore the results of the work done in Washington are capable of general application. Typhoid investigations have also been carried on in various other cities throughout the country.

Poliomyelitis has also been the subject of investigation and its epidemiology has been studied in various localities, where it has from time to time been present to an unusual degree.

In the prosecution of experimental work in the laboratory, officers have succeeded in inoculating monkeys with the virus of measles and have produced in these animals febrile attacks accompanied by a more or less typical exanthem. This will without doubt render possible further additions to our knowledge of the disease.

The typhus fever of Mexico has been studied, as has also the so-called Brill's disease, with the result that the two diseases have been given to monkeys and it has been found that each produced an immunity to the other, and that the two affections are therefore probably identical.

For some time the Service has had officers studying pellagra which has, during the last few years, been found to exist extensively in the United States. Studies have been carried on as to its cause and mode of transmission. The marine hospital at Savannah, Ga., has been made a special hospital for the study of this disease, and in it pellagrins are admitted, treated, and studied. The hospital is in charge of Passed Assistant Surgeon Lavinder, whose name has become intimately associated with the history of pellagra in the United States.

The Public Health Service maintains a station for the investigation of leprosy, located at Honolulu. Leprosy is a serious problem in Hawaii and it is hoped that the studies being pursued will assist in its solution. The disease is also present in the Philippines. With leprosy in our Pacific Islands, cases are likely to, from time to time, find their way to the United States. At the present time, there are approximately 200 lepers in this country, so that with a view to the future the study of this disease is important.

The Service has laboratories located at San Francisco and Seattle for the study of plague. These were primarily established in connection with work to combat and eradicate this disease on the Pacific coast. The conditions offered special opportunities for the study of plague and advantage has been taken of them. Much valuable work has been done, and important contributions have been made to our knowledge of the disease.

Prevalence and Geographic Distribution of Disease.

The Service publishes weekly the Public Health Reports which give current information in regard to epidemics and sanitary conditions throughout the world, special attention being given to the prevalence of the diseases made subject to restrictions by the United States Quarantine Regulations. By consulting any issue of the Public Health Reports the places where these diseases are known to exist can be found.

The information is obtained from various sources. The American Consuls throughout the world report weekly in regard to the number of cases of and deaths from contagious disease reported in the city, province, or country where they are stationed. Whenever cholera, yellow fever or plague breaks out, it is reported by cable. The service officers stationed abroad also make a weekly report in regard to epidemic diseases and matters of sanitary and public health interest.

This information is necessary for the efficient administration of the national maritime quarantine and the protection of the country from the importation of dangerous diseases by ships sailing from foreign ports and by the many immigrants who annually come to the United States.

The prevalence of epidemics and epidemic diseases in the United States is also shown in the Public Health Reports in so far as the information is available.

Public health work and sanitation being the prevention of disease are dependent for their success upon a knowledge of the prevalence and geographic distribution of the preventable diseases. A knowledge of this prevalence and distribution is the foundation of all public health work. City, state and national sanitary measures depend upon it for their success and intelligent administration. To the state and city health authorities in their endeavors for the suppression of the communicable diseases, a knowledge of the number of cases existing, and where they are, is necessary. For the proper carrying out of public health work by the state a knowledge of the prevalence and distribution of the preventable diseases within the state is likewise an essential and, finally, national public health activities must necessarily be based upon a knowledge of the distribution of disease. In securing this information, an important factor is the practicing physician, the accuracy of our information on the subject depending upon the notification of cases by the physician, without whose co-operation there can be no accurate knowledge of the prevalence and geographic distribution of disease.

The Public Health Service compiles for the United States as a whole available reports of the prevalence of disease. It depends for these reports upon the state and city boards of health, which in turn, depend upon the practicing physician.

Epidemic Work.

The Service is frequently called upon by state boards of health to suppress outbreaks of epidemic diseases in places where the local health authorities are unable to cope with the situation. Two recent illustrations of this feature of the service work are the outbreaks of yellow fever in New Orleans in 1905 and the outbreak of plague on the Pacific Coast in 1907.

On July 18, 1905, the Service Officer in charge of the Marine Hospital at New Orleans, telegraphed to the Surgeon-General that there were rumors of the presence of yellow fever in New Orleans. He was immediately ordered to investigate the situation and became convinced that yellow fever was present. Another officer was ordered to New Orleans for the same purpose, and upon arrival definitely diagnosed yellow fever in two cases.

The early cases were in the neighborhood of the French market. Just how long the infection had existed could not be definitely ascertained. After it had been positively stated that the disease was present, cases were reported in considerable numbers. Between July 21 and 26 there were officially reported 73 cases with 22 deaths. It was known, however, that there were other cases not reported. By August 3d, the number had increased to 308 cases with 59 deaths.

In the meantime, the Service had on July 22d ordered officers to New Orleans to see that the interstate quarantine regulations were complied with and the disease not allowed to spread into other states. For this purpose an inspection of steamboats and trains was inaugurated.

The boards of health of New Orleans and the state of Louisiana went energetically to work to suppress the disease, but by August 4, the number of cases had so increased that they asked the Federal Government to take charge of the work. On August 6, the Public Health and Marine Hospital Service took charge and 24 officers were sent immediately to New Orleans.

The city was divided into 17 districts and a medical officer placed in charge of each. Yellow fever being a disease spread only by the bites of infected mosquitoes, the first consideration was the destruction of these insects.

In each district, there were employed gangs of men to screen houses and cisterns, the former to keep mosquitoes out of the houses and the latter to keep them from the water, where they could lay their eggs. There were other gangs to fumigate houses for the destruction of mosquitoes, others to salt and oil deposits of water where mosquitoes might breed.

The disease had become well established in the city and a large area infected. However, in three months the epidemic

U. S. LEPROSY INVESTIGATION STATION, KALAWAO, MOLOKAI, HAWAII.

was suppressed. Altogether there were in New Orleans 3,404 reported cases of yellow fever with 452 deaths.

The Service is at the present time engaged in the eradication of plague on the Pacific Coast.

Plague is endemic in certain localities of Asia. One of these is in Western Asia, another in Southern China. It was from the latter focus that the disease is supposed to have spread in 1894; first to Canton where it is estimated there were 120,000 deaths between March and August; then from Canton to Hongkong, Amoy and other Chinese ports. In 1896 India was invaded. The disease continued to spread year after year and successively invaded Japan, Turkey, Egypt, Madagascar, the Hawaiian Islands, various countries in Europe, South America, and finally, in 1900, the Pacific Coast of the United States. On March 6th, of that year, a death from plague occurred in the Chinese quarter of San Francisco and by the end of the year 21 more were reported. During each of the next four years there were a few deaths due to plague in San Francisco and during this time the service kept officers there to assist in its control and suppression. Then for three years there were no cases.

A second outbreak began in 1907, the first case being a sailor from a tugboat. This man died in the Marine Hospital at San Francisco in May. No other case was reported until the 12th of August. By September 4, however, 17 cases and 8 deaths had been recorded.

The cases first appeared on the water-front, but were soon being found in other localities so that the infection seemed to be more or less general. At this time, the state and local authorities again requested the assistance of the federal government. The Public Health Service immediately put in charge of this work Passed Assistant Surgeon Rupert Blue, who has since that time been appointed Surgeon General by the President. Other service officers were detailed to work under Dr. Blue. It was found that plague was more or less widespread in San Francisco, cases having occurred in all parts of the city. The difficulties of the situation were added to because of the disorganized and ruined condition of the city as a result of the earthquake in April, 1906. The city was being reconstructed and the streets in many places were littered with debris.

In many places, people were living crowded together under very unsanitary conditions without sewerage or efficient garbage disposal. The conditions were favorable for the rat population of the city.

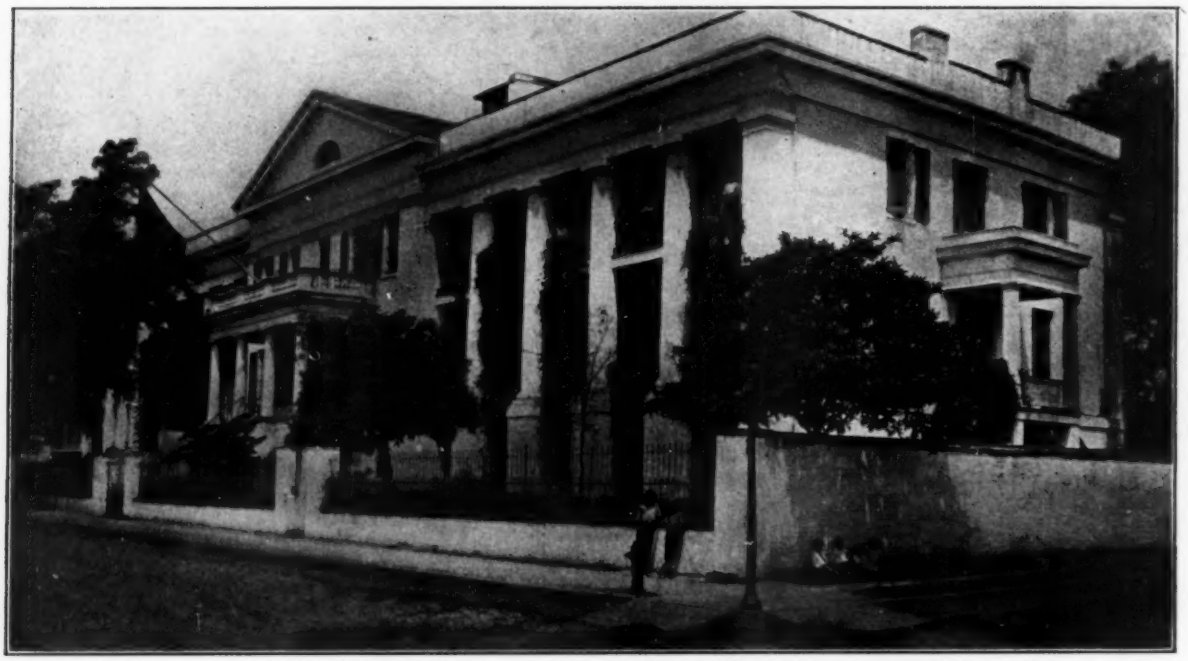
Plague, as is well known, is primarily an epizootic affecting rodents, and so far as man is concerned it is primarily a disease of the common rat which is present in every city and infects houses, stores, stables, office buildings, sewers and in fact any building or refuse pile that will furnish food and shelter. The disease is usually spread from rat to rat and from rat to man by fleas. When a rat dies of plague the fleas leave it and go to other rats or in the temporary absence of other rats to man. When a flea which has thus been living on and biting a plague sick rat bites another rat or bites man he infects the healthy rat or man as the case may be, with plague. It has been proved that certain fleas can spread plague in this way. It is, however, possible that many or all fleas can spread the infection. To do this, however, they must first suck the blood of a plague sick animal and then soon after bite another animal susceptible to the disease.

Work done at San Francisco has shown that five varieties of rat fleas and two varieties of squirrel fleas will readily feed on man under experimental conditions. Also squirrel fleas have been found on rats in San Francisco. The spread of plague usually depends first upon the presence of the disease among rodents, in cities this invariably means rats and mice; and, second, upon the presence of fleas to carry it from rat to rat and from rat to man. The spread of the disease, therefore, varies with the number of rats and with the prevalence of fleas.

When the service took charge of the plague situation in San Francisco, the first consideration was given to the destruction of rats. The city was divided into districts. Each district was put in charge of a medical officer under whom were inspectors and gangs of men to perform various kinds of work.

Up to January 30, 1908, there had been 159 cases of plague with 77 deaths in San Francisco. Since then no human case has been reported in the city.

A systematic and energetic crusade against rats has been one of the main features of the work. Rat poison has been distributed and traps set and visited daily. Rat habitations and runs have been destroyed wherever found. Concrete floors have been put in cellars, concrete has taken the place of wood in sidewalks and areaways. It was also attempted



U. S. MARINE HOSPITAL, MOBILE, ALA.

tc deprive the rats of food by a careful attention to the disposal of garbage. All garbage was required to be kept in galvanized iron cans carefully covered. All these measures are necessary to reduce the number of rats to a point where they can be controlled. In this work over 758,000 rats have been trapped or otherwise collected. The number killed by poison can never be known. However, it is perhaps impossible tc exterminate the rats in a city, the only way to eliminate them as a nuisance and menace to the health of the community being to erect rat proof buildings by the use of brick, stone and concrete in the cellars and foundations, and side walls to a certain height.

Of the rats trapped at San Francisco more than 400,000 were examined in the Service laboratory and among them were found 398 infected with plague.

In October, 1907, two cases of human plague occurred in Seattle. Officers were put in charge of the work and have so far found 25 infected rats, the last one being found September 21, 1911.

Cases of human plague have occurred in the cities of Berkeley, Oakland and Point Richmond, and in Contra Costa, Alameda, San Benito, San Joaquin, Santa Clara and Los Angeles Counties, California.

Occasional cases of human plague had occurred in Contra Costa County. This led to the belief that the disease must exist among the rodents of this county. It was known that some disease had for several years existed among the ground squirrels and Dr. Blue upon investigation succeeded in finding 4 infected with plague. An extensive campaign was then started with the double purpose of destroying the squirrels and of ascertaining how widely distributed the infection was among them. Over 250,000 squirrels have been caught and examined for plague. Of these 565 were found to be infected.

While plague still exists in certain localities in California among the ground squirrels it is being so controlled that it is not a menace to man, and although rats are being caught continuously in large numbers in the cities, it is some time since an infected rat was found. No plague infected rat has been discovered in San Francisco since October 23, 1908.

Control of the Manufacture of Vaccines, Serums, Antitoxins and Analogous Products.

In 1902, Congress passed a law to regulate the manufacture and sale of vaccines, serums and antitoxins. Under this law the Treasury Department through the Public Health Service regulates the conditions and methods of manufacture of all vaccine, diphtheria antitoxin, tetanus antitoxin and similar products sold in interstate traffic or imported from abroad.

Each establishment manufacturing any of these products is required to have a license issued by the Treasury Department upon the recommendation of the Surgeon-General of the Public Health and Marine Hospital Service.

Before a license is granted each laboratory is inspected to ascertain that proper methods and technique are employed in manufacture, and samples of the products for which a license is sought are examined in the Hygienic Laboratory at Washington. This examination ascertains that the product is pure, that it is potent and that it does not contain an excessive amount of preservative. These licenses are issued for one year at the expiration of which time another inspection is made if it is desired to renew the license. In addition to this the products of licensed establishments are purchased from time to time in the open market and examined. This guarantees the continued excellence of the vaccines, serums, and similar products issued.

Before the manufacture of these products was regulated in this way there were concerns (principally small ones) marketing products prepared by poorly trained men, using unsatisfactory methods and insufficient equipment. Many of these were refused a license after the passage of the law and went out of business. others remodeled their laboratories and made needed changes in methods and personnel. The enforcement of this law was welcomed by the firms making reliable vaccines and antitoxins as it protected them from the competition of those turning out an inferior product which cost less to prepare.

Since the enactment of the law, standards have been established for diphtheria and tetanus antitoxins. Previously there was no standard. The label on a package of antitoxin, stating that it contained so many units, 500 or 5,000, as the

case might be, meant little or nothing; for there was no standard unit. A package labeled 10 units might be more potent than one labeled 10,000 units. At the present time the Service sends bi-monthly to licensed establishments standard units of diphtheria antitoxin and tetanus toxin prepared in the Hygienic Laboratory.

Antitoxins put upon the market must be labeled with these units as a standard. This guarantees that a package marked as containing so many units has a definite strength and the physician using it knows the size of the dose being administered.

State and Local Sanitary Laws and Regulations.

The Service is compiling the state laws and regulations pertaining to the public health as the first essential for a proper understanding of the public health activities of the country. These for convenience in reference are being grouped under subjects and published in bulletins of which two have already been issued, one entitled "A Digest of the Laws and Regulations of the Various States Relating to the Reporting of Cases of Sickness" and one "Ophthalmia Neonatorum, An Analysis of the Laws and Regulations Relating Thereto in Force in the United States." The sanitary ordinances and regulations of cities are published currently in the Public Health Reports and periodically reprinted, arranged under subjects in a form convenient for reference.

Quarantine.

Under the Secretary of the Treasury, the Service maintains the national quarantines, the maritime and the interstate. Originally the word "quarantine" meant a period of 40 days. Then as this was the length of time which ships coming from ports where certain diseases were epidemic were required to remain at anchorage provided for the purpose before discharging their cargo or passengers, the term came to be applied to the detention of ships. From this it was a mere step to apply the term to the detention of vessels for sanitary observation or treatment regardless of the length of time involved. Now the term is applied generally to the isolation or detention of persons infected with a contagious disease, of persons possibly so infected or of persons who while not themselves infected may be the means of infecting others, also to the restrictions placed upon travel and commerce to prevent the spread of infectious diseases both by land and by sea.

Maritime quarantine includes the restrictions placed upon ships and their passengers and crews to prevent the introduction of infectious diseases from foreign countries or from one port to another of the same country.

It is known, for example, that at the present time (February 20, 1912), there is yellow fever in the cities of Manaos, Brazil, and Guayaquil, Ecuador; and that there is cholera in Calcutta. Vessels coming from infected ports might readily introduce these diseases into the United States. It is to prevent this that a maritime quarantine is maintained. Among the diseases which it is by law the duty of the quarantine officer to keep out are cholera, yellow fever, smallpox, typhus fever, leprosy and plague. In doing this, he must not only keep in mind the possibility of the disease being introduced by persons, but in yellow fever, equal attention must be given to mosquitoes, and in plague attention must be given to the rats on the ship.

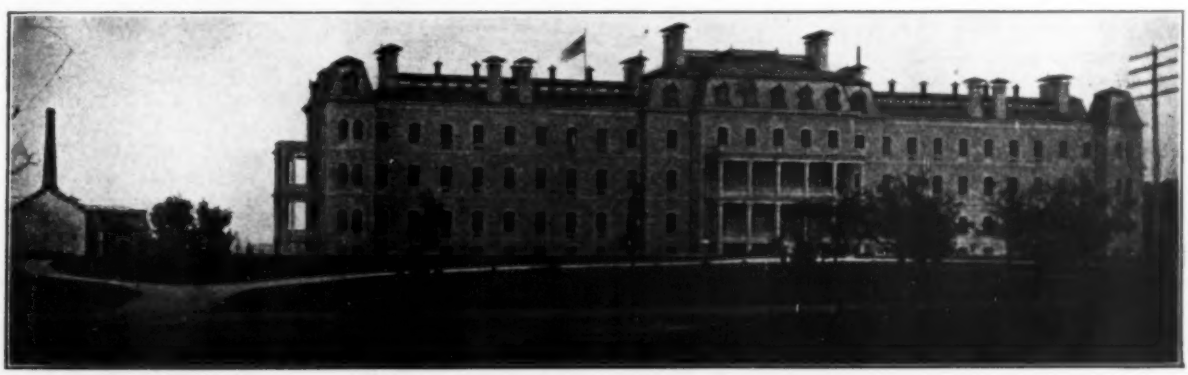
These diseases may in a sense all be classed as exotic; cholera and yellow fever are truly so. In the case of smallpox, while thousands of cases occur every year in the United States it is of an exceedingly mild type. On the other hand, smallpox in most foreign countries is not of this mild type. During the year 1910, there were in the United States 30,352 reported cases of smallpox with only 415 deaths, while in Rio de Janeiro, Brazil, during 1908, there were 13,596 cases with 5,945 deaths, and in Moscow, Russia, 1,203 cases reported with 561 deaths.

Cases of leprosy have existed in the United States for many years. At the present time there are as previously stated, about 200 cases of this disease. However, cases seldom originate in this country and there are comparatively so few that it is important not to allow foreign lepers to come in and add to the number already here who are subjects of charity and a burden upon the community.

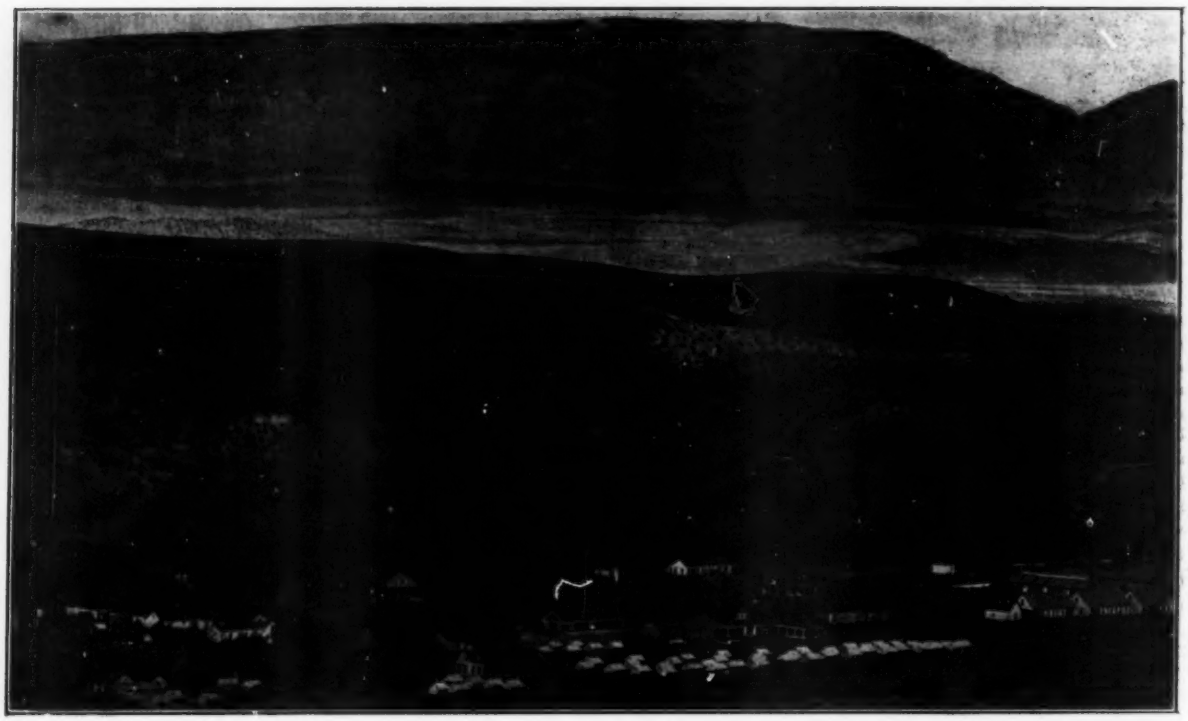
Plague was truly exotic until it gained a foothold in the United States. This entrance occurred before the exact means of its conveyance by rats and from rats to man by fleas was known.

For the purpose of protecting the country from these diseases the Service maintains 44 quarantine stations situated along the Atlantic, Gulf and Pacific coasts of the United States from Portland, Me., to Port Townsend, Wash. Officers are stationed at these places and vessels coming to the United States from foreign countries are boarded and inspected before entering the port, and, if a case of any of the quarantinable diseases is found on board or if they have come from an infected port without having taken proper precautions as specified in the quarantine regulations, the vessel is detained for observation, disinfected or otherwise treated as the special features of the case may indicate, or the quarantine laws and regulations require.

Distributed at convenient intervals along the coast are specially equipped stations with large barracks furnished for the detention of passengers and crews of vessels whom it may be necessary to isolate because of the existence among them of cases of contagious disease. At these stations are also hospitals for the care of the sick, laboratories for the diagnosis and study of disease, crematories for the safe disposal of the dead, sulphur furnaces and other apparatus for the disinfection of vessels and all the things necessary for the comfort and care of a large number of people. With these precautions vessels coming from all parts of the world, from ports where plague, cholera, yellow fever and typhus fever exist or are epidemic, or vessels with smallpox or other



U. S. MARINE HOSPITAL, CHICAGO, ILLS



TUBERCULOSIS SANITARIUM, U. S. P. H. & M. H. S. FORT STANTON, NEW MEXICO.

diseases on board, enter the ports of the United States under conditions which prevent the introduction of the dangerous epidemic diseases.

The chain of quarantine stations constitutes a net which holds in its meshes and keeps out the dangerous element of maritime commerce.

In addition to the quarantine stations in the continental United States, the Service maintains others located in Porto Rico, Hawaii and the Philippines. These stations protect the islands from invasion by disease and serve as additional protection to the states against the importation of disease from the islands. As a still further protection, medical officers are detailed to many important foreign ports, among which are Calcutta, Amoy, Shanghai, Hongkong, Kobe and Yokohoma. At these places they inspect vessels bound for the United States and issue bills of health to them.

Whenever any of the quarantinable diseases prevail in an unusual degree in a place which can directly or indirectly be a menace to this country, special officers are detailed to investigate and report upon existing conditions and, if need be, officers are kept at these places to inspect all passengers and merchandise intended for the United States and to see that the quarantine regulations are complied with. During the recent prevalence of cholera in Italy, officers were stationed at Genoa and Palermo, Italy, and at Marseilles, France, in addition to the officers always kept at Naples. Each summer officers are stationed at the cities in Central America known as the fruit ports, and from which most of our bananas come. These ports are a source of danger mainly because they are frequently infected with yellow fever which the fruit steamers might easily bring to the Gulf States.

Medical Inspection of Immigrants.

Approximately one million immigrants come to this country each year. These seekers of a home in the fabled land of plenty come from all parts of Europe and a few from elsewhere. They consist chiefly of Italians, Slavs, Russian Jews, Greeks, Syrians and Scandinavians.

Naturally among this vast number there are many cases of disease and there would be more were it not for the known restrictions. If the cases of chronic contagious disease were admitted they would constitute foci of infection and spread the disease to others. Cases of tuberculosis would not only constitute foci of infection, but the affected immigrants would in many cases, be incapacitated from earning a living and would thus become public charges and a burden upon the community. Other diseases not contagious might simply render the immigrants unable to be self-supporting.

The country does not want immigrants who will spread disease nor those who will have to be supported by state or individual charity. To keep out the undesirable, diseased and decrepit, all immigrants undergo a medical examination by officers of the Public Health Service and those found suffering from loathsome or dangerous contagious diseases, insane persons, idiots, epileptics and those likely to become public charges because of infirmities, are detained and deported by the immigration officials. Steamships bringing immigrants are required to carry those thus deported back to the port from which they came. A large percentage of the immigrants come to New York, and as many as 10,000 frequently arrive in one day at Ellis Island, where the immigration station for the port of New York is located.

Examining daily, in this way, large numbers of people, the officers of Ellis Island become expert in the detection and diagnosis of certain diseases. The work in reality constitutes an immense clinic, with the complication, however, that the diseased are distributed among large numbers of the well and that instead of desiring to be found out and have their cases diagnosed, the reverse is true and everything is done to conceal disabilities. Ellis Island has undoubtedly the largest clinic of trachoma cases to be found in this country. Whenever there is any doubt as to a diagnosis the patient is detained under observation in the hospital provided for the purpose until such time as a positive diagnosis can be made.

This inspection of immigrants is carried on not only at our seaports, but also along the Mexican and Canadian borders, wherever there is direct communication by boat or railroad. In this way thousands of cases of contagious diseases and thousands of immigrants who would soon become a burden upon public or private charities are kept out of the country. At Ellis Island, the service has 20 medical officers engaged at this work. Officers detailed at foreign ports examine all emigrants for the United States embarking at their respective ports and in this way reject many who otherwise would make a long and expensive journey only to be debarred and deported when they reached this country.

Medical and Surgical Work.

For the medical care and treatment of the employees of various branches of the Government and of the merchant marine, the Service maintains 23 marine hospitals and 118 marine hospital stations where during the last fiscal year over 52,000 patients received treatment.

The Service maintains a sanatorium at Fort Stanton, New Mex., for the treatment of tuberculosis, located on a reservation 38 square miles in area. It is on a plateau having an altitude of 6,200 feet. About 200 patients are continually under treatment. They can stay until cured and in fact are encouraged to do so.

In its capacity as a general medical service for the Government the Service makes physical examinations of all officers and enlisted men and applicants for enlistment in the Revenue Cutter Service, and in addition to giving medical attendance at the marine hospitals and marine hospital stations, details medical officers on the Revenue Cutters.

For the steamboat inspection service, all applicants for pilot's license are examined for visual acuity and color sense. For the Life Saving Service, in addition to giving medical attendance, all applicants for enlistment are given a physical examination and all members of crews are re-examined each year. Applicants for employment in the Coast and Geodetic Survey, in the Light House Service, the Immigration Service and under the Isthmian Canal Commission are given physical examinations.

Co-operation of State Boards of Health.

The Public Health and Marine Hospital Service as the national public health service also co-operates with the State Boards of Health, and renders them assistance whenever desired by the detail of officers and in other ways.

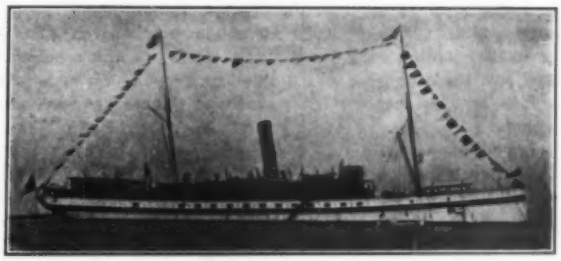
The federal government through this service stands ready at any time to render assistance in the control of infectious diseases and to take charge of the suppression of epidemics whenever the authorities of a state so desire.

Once a year the representatives of the State Boards of Health meet in conference with the Surgeon-General of the Public Health and Marine Hospital Service. This conference gives an opportunity for an interchange of views and tends to produce a uniformity in health administration throughout the country.

Albuminuria and Indicanuria.

Israel Bram, Philadelphia (*J. A. M. A.*, March 2), says that from the records of 500 specimens of urine examined in the clinical laboratories of the Medico-Chirurgical and Jewish hospitals during 1909 and 1910, and also in his office practice, he finds an apparent definite relationship existing between the occurrence of albumin and indican. It is not common to find albumin and indican present in the same specimens of urine, and when such occurs one or the other will be in such minute quantity as to give a questionable reaction. He finds no previous record of such relationship in the standard works on urinalysis. The tests used for albumin were the nitric acid contact test, the heat test and contact test with Roberts' solution. For indican the procedure of Daland was employed. This apparent relationship between albuminuria and indicanuria needs, he thinks, further investigation.

U. S. S. SOLACE, GUANTANAMO BAY, CUBA.



THE MEDICAL CORPS OF THE UNITED STATES NAVY.

CHARLES FRANCIS STOKES, M. D.
Surgeon General of the United States Navy.
Washington, D. C.

The Medical Corps of the United States Navy was established by the Act of January 6, 1776. A surgeon and a surgeon's mate were assigned to each man of war: the surgeon being a commissioned officer and the surgeon's mate, or assistant surgeon, being a warrant officer. The pay of a surgeon on a large vessel was $25.00 per month, on a small vessel $21.33 per month, while their mates received $15.00 and $13.33 per month respectively. This was proportionate to the pay of the other officers. The income was augmented at times by prize money and bounties.

There was no fixed numerical strength of the medical corps at this time, the number depending upon the number of ships in commission. If a ship to which a surgeon was attached was put out of commission, the medical officer was compelled to seek an assignment on another ship of war, go on one of the many private armed ships, or else remain idle. They received no pay or allowances when not on active duty on a commissioned vessel of the U. S. Navy.

There was no examination prior to appointment at this time, but in 1777, an act was passed prescribing that, "No surgeon or mate could be commissioned or warranted without a favorable certificate of examination from at least one examiner appointed for this purpose." The pay and allowances of surgeons were also equalized with those of the lieutenants. They received $4.00 a week allowances for board when not subsisted upon their ships.

In 1812 there were in the Navy twenty-six surgeons and the same number of mates; in 1815, at the close of the war, forty-seven surgeons and thirty-four mates; and in 1825 there were on the Navy list thirty-four surgeons and forty surgeon's mates.

The act of May 24, 1828, provided that no assistant surgeon, (formerly called a surgeon's mate), could be appointed unless he had successfully passed an examination by a board of naval surgeons, and that commissions to the higher grade of surgeon could only be issued by promotion from the lower grade of assistant surgeon, after a two years' cruise at sea, and the candidate's demonstrating his fitness for promotion before an examining board of naval surgeons.

The expansion of the Navy and its prominence in world movements during recent years have been accompanied by enlarged responsibilities and corresponding professional opportunities for its personnel. The Medical Corps has kept steadily abreast of these advances, as is inevitable when it is considered that members of this corps share with all other officers of the Navy, one common ideal, the promotion of military efficiency, and to this end the medical officer has at his disposition all the devices and procedures embraced within the broad field of modern medical and surgical science. In the maintenance of these high aims it is, of course, desirable that the best type of young medical men will continue to be attracted to this branch of the Navy. It is a scientific service,

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and there is every reason why its position as such should continue to improve. Individual merit is thoroughly appreciated and recognized. Every encouragement is given an officer to develop himself along special lines in which he may have particular interest and aptitude, in so far as such proficiency benefits him for his paramount duty of endeavoring to maintain the health of the personnel in the highest state of effectiveness.

The naval service, by reason of its world-wide intercourse, is essentially aristocratic, in that it requires the instincts, discernment and conduct of a gentleman in its officer personnel. As officers of the Navy come into contact with the most cultivated and interesting people of every country, it is essential that personal qualifications should enter into the determination of general suitability for the service. The wide range in the character of their work and responsibilities calls for high professional standard and ready adaptability.

The status of the medical officer in his relation to the rest of the service is established on a high plane; he is vested with proper authority, receives due recognition, as in civil life, wherever and whenever merited, and fills a position socially, professionally and officially which self-respect approves. He is a wardroom officer as soon as he enters the service, and his personal accommodations are the same as those of his brother officers.

The professional opportunities of a medical officer in the Navy are liberal and broad, and of a character gratifying to ambition. There is ample pathological material, facilities for diagnosis and treatment always in accordance with the most recent advances in medicine and surgery, while a complete equipment of instruments and apparatus for work of a routine or special nature is freely provided. For scientific investigation and research, particularly along the lines of hygiene, sanitation, and tropical medicine, the naval surgeon has peculiar advantages which he is given every encouragement to pursue. There are a number of hospitals in the naval establishment along the Atlantic and Pacific coasts of the United States and also on foreign stations, such as the Philippine Islands, Guam, M. I., and Yokohama, Japan, and these institutions are strictly modern in their construction and appointments. On modern ships generous space specifically provided for in the plans, is assigned for the care of the sick and injured, and the arrangement, construction and equipment of these sick quarters conform to the most advanced medical and surgical standards. The hospital ship, under the command of a medical officer, is a floating hospital and offers every provision for thorough and efficient medical, surgical and laboratory work. Professional reference books and periodicals are issued for all ships and stations.

Upon entering the service a medical officer is usually assigned to one of the naval hospitals until the first of October succeeding his appointment, when he is detailed in attendance at the Naval Medical School, Washington, D. C. The course extends over a period of six months and looks to the preparation of the young surgeon for his subsequent duty. It is essentially practical, and includes tropical medicine, bacteriology and laboratory work, naval surgery, drills, and the special duties of medical officers. Aside from the professional studies the newly commissioned medical officer is instructed in discipline and the customs of the service ashore and afloat, matters of uniform, the use of side arms—in short, the Navy atmosphere and environments at the school fit the medical officer for the military as well as the medical character of his career so that he will feel no embarrassment in his new surroundings on shipboard. It has been well said that "There are few graduates of our best medical schools who are afforded an opportunity equal to that of the newly commissioned assistant surgeon of the Navy for rounding out their education as physicians and surgeons." During all this time they receive the full pay of their rank, with allowances.

Upon graduation from the Naval Medical School the young medical officers are usually detailed to sea duty, and after three years' service in the grade of assistant surgeon, are promoted to the grade of passed assistant surgeon upon passing the prescribed examinations.

Medical officers in the grades of surgeon, medical inspector, and medical director are eligible for appointment as surgeon general, with the rank, pay and allowances of rear admiral. The term of office is four years, the appointee being selected by the President on his record and eminence in the service.

A candidate for appointment in the Medical Corps of the Navy must be a citizen of the United States between twenty-one and thirty years of age, and must apply to the Chief of Bureau of Navigation, Navy Department, Washington, D. C., for permission to appear before a Naval Medical Examining Board.

The application must be in the handwriting of the applicant, stating age and place of birth; also the place and the state of which he is a permanent resident, and must be accompanied by letters or certificates from two or more persons of repute, testifying from personal knowledge to his good habits and moral character, and that he is a citizen of the United States; also by a certificate showing that he has served satisfactorily as interne in a general hospital at least one year since graduating in medicine. If a diploma is issued by the institution in which he has served as interne, he must be prepared to present the same before the Examining Board.

When a candidate presents himself for examination on the date fixed by the president of the board he must bring with him the testimonials as to character and professional fitness, diplomas, and a certificate that he is a citizen of the United States; those forwarded with his application being returned to him for this purpose. Candidates must have had at least one year's hospital experience after taking their medical degrees. The examination usually occupies about nine days, and is conducted in the following order: 1. Physical. 2. Professional. 3. Collateral.

The physical examination is thorough, and the candidate is required to certify, on oath, that he is free from all mental, physical and constitutional defects. Acuteness of vision, 12-20 for each eye, unaided by glasses, but capable of correction by aid of lenses to 20-20 is obligatory. Color perception must be normal and the teeth good. If the candidate is found to be physically disqualified his examination is concluded; if found to be physically qualified his examination is continued, as follows:

(1) Letter to the board describing in detail his general and professional education.

(2) Professional examination.

	Written questions.	Percentages required.
Anatomy (2) and physiology (1)	3	80
Surgery	3	80
Medicine	3	80
Pathology	2	70
Obstetrics (1) and medical jurisprudence (1)	2	60
Materia medica and physiological action of drugs	2	80
Chemistry (1) and clinical microscopy (1)	2	60
Hygiene (1) and quarantine (1)	2	80
General aptitude	..	80
Literary and scientific branches	..	80
Required aggregate	..	750

Bandaging; four operations on cadaver; clinical cases (a written report being made in one case, giving history, diagnosis, prognosis, treatment, one prescription, at least, being written out in full, in Latin); urinalysis (chemical and microscopical examination of one specimen of urine); practical microscopy and recognition of five mounted specimens (histological, pathological, and bacteriological); recognition of surgical instruments.

The oral examination follows the written work in each

branch, and the required percentage is made up from the combined results of the written and oral examinations. The percentages given are not absolute, however, as losses in some branches may be made good in others, provided the standard is reached in the cardinal subjects of anatomy, physiology, medicine and surgery.

The collateral examination embraces spelling, punctuation, the use of capital letters, grammar, arithmetic, geography (descriptive and physical), languages, history, general literature, elementary botany, geology and zoology. While due credit is given for a knowledge of languages and the sciences, it is not essential, except in the case of physics, but a knowledge of the common school branches is required. This examination will be omitted, in the discretion of the Naval Medical Examining Board, in the case of applicants holding diplomas or certificates from reputable literary or scientific colleges, normal schools, or high schools, or of graduates of medical schools which require an entrance examination satisfactory to the Naval Medical Examining Board.

The boards are required, under oath, to report on the physical, mental, moral and professional qualifications of the candidate, so that the examinations are necessarily comprehensive, though simple and practical, and not beyond the attainments of any well-educated physician. The oral and written questions are similar to those asked by the leading medical colleges in examinations for graduation.

A successful candidate, upon completion of his examination, will be notified by the president of the board that he has been found qualified.

With the consent of the board, a candidate may withdraw at any period from further examination, and may at a future time present himself for re-examination.

The tenure of office in the Medical Corps of the Navy is for life, unless sooner terminated by removal, resignation, disability, or other casualty.

All commissioned officers of the Navy, including the Medical Corps, are retired from active service at the age of 62 years, and when so retired (or when retired from active service for disability or other casualty contracted in line of duty before that age) receive an annual pay for life amounting to three-fourths of the highest pay of their grade at the time of retirement.

If, upon examination for promotion, an officer is found disqualified by reason of physical disability incurred in line of duty, he is retired on an annual pay amounting to three-fourths that of the grade to which he is due for promotion.

When any officer of the Navy, including medical officers, has been thirty years in the service, he may, upon his own application, in the discretion of the President, be retired from active service and placed upon the retired list with an annual pay for life amounting to three-fourths of the highest pay of his grade at the time of retirement.

Upon the death from wounds or disease contracted in line of duty of any officer, including medical officers (and immediately upon official notification thereof), there will be paid to the widow of such officer, or any person previously designated by him, an amount equal to six months' pay at the rate received by such officer at the date of his death.

When traveling in the United States under orders, officers of the Navy, including medical officers, receive 8 cents a mile to defray the expenses incident thereto, and when traveling by other than public conveyance at sea or outside the continental limits of the United States, such officers are allowed actual expenses.

On entering the naval service medical officers are credited with five years' service in recognition of the fact that they have been at their own expense in preparing themselves for government service) for the purpose of establishing their date of precedence as regards rank and for calculating their increase of pay for length of service.

For every five years' service the pay of officers is increased 10 per cent. (though not to exceed 40 per cent.), calculated on the annual base pay of their grade.

When an officer goes to sea or leaves the continental limits of the United States under assignment to stations or for the performance of other duties beyond the seas, his pay is increased 10 per cent., and this increase is calculated upon the pay, including increases for length of service, which said officer may be receiving at the time of entering upon such duty or to which he may succeed by virtue of promotion or length of service during the performance of such duty.

Assistant surgeons are examined at the expiration of three years' service for promotion, and, if successful, become passed assistant surgeons. Promotions to the higher grades are made in the order of seniority to fill vacancies as they are created (by resignation, retirement, death, and the operation of the thirty-year retirement privilege), and for each promotion a physical and professional examination is required by law. Vacancies through retirement, resignation and casualties are continually occurring.

The accompanying table shows the titles of officers in the various grades of the Medical Corps, the rank of each grade as compared with the line of the Navy and Army, the estimated number of years spent in, and the pay and allowances for, each grade.

Title.	Corresponding rank in Navy and Army		Estimated years in each grade.	Pay per annum		Allowance for quarters per annum.
				On shore.	At sea.	
Assistant Surgeon.....	Lieut. (junior grade).	First Lieut.	Three (fixed by law).	$2.200.00	$2.420.00	$432.00
Passed Assistant Surgeon:	Lieut.	Captain.	Eight.	2,640.00	2,904.00	576.00
After five years in service.....	.....	.....	.....	2.880.00	3.168.00	576.00
After ten years in service.....	.....	.....	.....	3,120.00	3.432.00	576.00
Surgeon:	Lieut. Comdr.	Major.	Eight.	3,600.00	3,960.00	720.00
After ten years in service.....	.....	.....	.....	3,900.00	4,290.00	720.00
After fifteen years in service....	.....	.....	.....	4,000.00	4,400.00	720.00
Medical Inspectors:	Commander.	Lieut. Col.	Eight.			
After fifteen years in service....	.....	.....	.....	4,500.00	4,950.00	864.00
Medical Directors:	Captain.	Colonel.	Until age of 62			
After fifteen years in service....	.....	.....	is reached.	5,000.00	5,500.00	1,008.00
Surgeon General.....	Rear Admiral.	Brigadier Gen.	By Presidential appointment and for term 4 years.	6,000.00	6,600.00	1,152.00

Note.—(1) Liberal allowances for fuel and coal when serving on shore; (2) eight cents a mile when traveling under orders within the limits of the United states; (3) actual expenses when traveling outside the limits of the United States under orders.

THE GOVERNMENTAL MEDICAL CORPS.

By the Editor.

No other government on earth is blessed with so high-grade medical corps as the United States. The personnel of the medical departments of the United States Army, the United States Navy and the United States Public Health and Marine Hospital Service is unusually high. More than one-third of these officers are the holders of collegiate degrees, in addition to the required degree of Doctor of Medicine, and every man possesses the very highest professional qualifications.

In these services many are called but few are chosen, as is seen from the large percentage of failures. The examinations are more comprehensive and severe than any state board in the Union, and the admission of a physician to one of the government's medical corps is proof positive that he is as well equipped as a man can be for the practice of medicine in every branch.

There are advantages and disadvantages in donning one of the medical uniforms of the United States. The officer is ever subject to orders which may carry him to the ends of the earth. If he is in the Navy he may be separated from his family for long periods when on sea service, unless his private means permit him to have his family follow his ship. He is ordinarily bound by a detail of four years and is certain to move every 48 months, if not oftener, and he can never expect to enjoy a practice, the emoluments from which vary from $50,000 to $100,000, as the optimistic newspapers tell us is the average income of the great city specialist.

On the other hand, the officer-physician, in whichever service, is always certain of a good living income, which automatically increases, of a good residence, of the best books, instruments and medical appliances and of every opportunity for doing original work. He does not have to worry over the collection of accounts, for Uncle Sam is a good paymaster and has never been known to overlook his medical men when making out the monthly payroll. At the age of 62 the medical officer retires upon three-fourths of his highest pay and he can go down to the sunset of life content in the thought that an appreciative government will provide for the material wants of his family and himself.

While the remuneration of medical officers is not stupendous, it is far above the reputed $700 per year which statisticians assure us is the average income of the physicians of the United States.

In view of the very comprehensive articles which appear in this number of the Medical Times on the Navy and Public Health and Marine Hospital Service (why not a less cumbersome name?) by officials of those services this paper will deal more largely with the army, although its two sister organizations will not be neglected.

It is of interest to all medical men to know where the officers of our three great medical corps received their professional educations. A perusal of official records discloses many entertaining facts. For years the graduates of the University of Pennsylvania have predominated in the official medical world of our government. This year is no exception to the rule. Pennsylvania stands at the head of the list of colleges, having 95 alumni in the army, navy and marine hospital corps. The University of Virginia stands second with 80. George Washington University (including Columbian) is third with 57, and Jefferson is fourth with 53. In order thereafter are University of Maryland 38, Harvard 35, Columbia (College of P. & S.) 31, New York University (including Bellevue) 28, University of Michigan 28, and Georgetown 27. It should be observed that all of these colleges, with one exception, are practically if not actually on the Atlantic Coast. The splendid medical schools of California have but 16 graduates in the great services and these are alumni of five different institutions.

It is a rather significant fact that in over one-third of our states which have medical colleges there are only 40 representatives in the three services. No graduates of any medical school in the great commonwealths of Indiana, West Virginia, Mississippi, Oklahoma, North and South Dakota, Colorado and Oregon are to be found among the government's medical officers. The number from others of the leading states is pitiably small. Minnesota, Kansas and Nebraska each have 3 and Wisconsin but 1. Politicians from these states blatantly proclaim that their states represent the best thought of the universe, but their medical graduates are certainly missing wonderful opportunities of usefulness. Texas, with several army posts and Marine Hospital quarantine stations within its borders, has only 8 men in the services; Iowa, the possessor of a model, though in our opinion useless, army post, has 5, of whom 2 are in the navy; Georgia, with a fine post and quarantine station, has 6; South Carolina, in which are located the various naval institutions at Charleston and Port Royal, has 7 men in the three services, but with all the navy proclivities it is odd to note that five of these graduates are Marine Hospital surgeons and the remaining two are in the army. Alabama has two representatives and Arkansas and North Carolina each have one.

It is easily noticeable that the east furnishes Uncle Sam with the greater part of his official medical men. Pennsylvania is far in the lead with 166; Virginia is second with 90; and then follows New York, 88; District of Columbia, 84, and Maryland, 70. The New England states do not make the showing one might expect, considering the army and navy traditions possessed by each one. Massachusetts, with four medical colleges, including Harvard, naturally leads with 41 men in the services; Connecticut, with Yale, has 10; New Hampshire, with Dartmouth, 7; and Maine, with Bowdoin, 4.

Poor old Vermont has one lone representative, an army sur-

HOSPITAL SHIP "SOLACE."

OPERATING ROOM—PORT SIDE.

SURGICAL WARD—PORT SIDE

geon; Rhode Island is replete with army and navy institutions, but has no medical school.

Crossing the Alleghanies we find that Ohio has 24 graduates in the services, of whom 14 are in the army; Illinois has 34, of whom 17 are army surgeons; Michigan has 36, 16 in the navy, 15 in the army and 5 in the marine hospital; Missouri has 23, and of these 11 are in the army.

In addition to the figures of the southern states already quoted, Tennessee and Louisiana are tied with 14 men each in the combined services, and Kentucky has 12.

In giving these figures it must be understood that no claim is made as to the nativity of the medical officers. For example, while New Hampshire has only seven graduates of its one medical school, Dartmouth, in the services, there are numerous surgeons born in or appointed from New Hampshire who received their medical educations in colleges outside of their native or adopted state. The same is true of Rhode Island and indeed of probably a great majority of the commonwealths making up the Union.

For a more careful analysis of the figures, the medical college representation in the services is appended. In the army, for example, the officers and their college affiliations are:

University of Pennsylvania, 44; George Washington University (Columbian), 32; Jefferson, 26; University of Virginia, 25; University of Maryland, 19; Columbia University (N. Y. Coll. of P. & S.), 13; New York University (Bellevue), 12; University of Michigan, 10; Georgetown, 10; Harvard, 9; University of Cincinnati (Med. Coll. O. & Miami), 9; Tulane, 8; Johns Hopkins, 8; Rush, 7; Medico-Chirurgical, 7; University of Louisville (Louisville Med. & Hospital M. C.), 7; Northwestern, 6; University of Buffalo, 6; Yale, 5; Washington University, 5; Detroit College of Medicine, 4; Medical College of Virginia, 4; Vanderbilt, 4; St. Louis University, 4; Union University Albany Medical), 3; Syracuse University, 3; University of Iowa, 3; Barnes, 3; Baltimore Medical, 3; University of Illinois, 3; University of California, 2; College P. & S., Baltimore, 2; Medical College of South Carolina, 2; Western Reserve, 2; University of Minnesota, 2; Bowdoin (Medical School of Maine), 2; College of P. & S., Atlanta, 2; Starling, 2; Tufts, 2; Cornell, 2; University of Kansas, 2.

The following have one representative each: Dartmouth, University of the South, University of Kentucky, Kansas City Medical College, Central University of Kentucky, University of Missouri, Michigan College of Medicine and Surgery, McGill, Cooper, University of Texas, Southern Medical, University of Vermont, Kansas Medical, University of Tennessee, University of Arkansas, Long Island College, College of P. & S., Cleveland, Leland Stanford, Marquette, University College, Richmond, University of Southern California, Birmingham Medical and the Chicago College of Medicine and Surgery.

The various medical schools are represented in the United States Navy as follows:

University of Pennsylvania, 40; University of Virginity, 39; Harvard, 20; Jefferson, 20; George Washington (Columbian), 17; Columbia (N. Y. P. & S.), 15; University of Michigan, 14; New York University (Bellevue), 13; Georgetown, 11; University of Maryland, 9; Rush, 9; Medico-Chirurgical, 8; University of Illinois, 5; Cooper, 4; Dartmouth, 4; Johns Hopkins, 4; University of California, 4; Washington University, 4; Yale, 4; Baltimore Medical, 3; Coll. of P. & S., Baltimore, 3; Cornell, 3; Long Island College, 3; Medical College of Virginia, 3; University of Texas, 3; Vanderbilt, 3.

The following have two each: University of Cincinnati (Miami), Detroit Medical, Hahnemann of Philadelphia, Creighton, Tufts, University of Buffalo, University of Iowa and University of the South. These have one representative each: College of P. & S., Atlanta; College of P. & S., San Francisco; Kentucky School of Medicine; Union University (Albany); Leland-Stanford, Marion-Sims, Bowdoin, University of Nebraska, Starling, St. Louis University, University of Alabama, University of Louisiana, University Medical of Kansas City, University of Minnesota, and Western Reserve.

Here is the medical school representation in the United States Public Health and Marine Hospital Service:

University of Virginia, 16; University of Pennsylvania, 11; University of Maryland, 10; George Washington, 8; Jefferson, 7; Georgetown, 6; Harvard, 6; Medical College of South Carolina, 5; Tulane 5; University of Michigan, 4; University of Texas, 4; College of P. & S., Baltimore, 4; University of Cincinnati (Ohio-Miami), 4; New York University (Bellevue), 3; Columbia (N. Y. College of P. & S.), 3; Western Reserve, 3; University of Texas, 3.

These have two each: Dartmouth, Medical College of Virginia, Southern Medical, University of Chattanooga, University of Louisville, Rush, Washington University, Long Island Hospital, Union University (Albany), and Johns Hopkins.

These colleges are each represented by one graduate: McGill, Northwestern, College of P. & S., Boston; Yale, Baltimore University, Detroit College of Medicine, Maryland Medical, University Medical of Kansas City, University of the South, Cornell, Bowdoin, Pennsylvania Medical, Baltimore Medical and the universities of North Carolina, California and Buffalo.

The changes in the personnel of the army are constant and a comparison of the statistics of to-day and five years ago is interesting. In the *New York Medical Journal* of Oct. 26, 1907, there appeared an article, "Some Facts Anent the Personnel of the Army Medical Department," based on the official army register of 1907, in which I brought out many facts concerning army surgeons which cannot ordinarily be known to the medical profession. In that year the War Department adopted the wise plan of publishing the educational qualifications of every officer in the army. In this manner much valuable information became public. For some reason the register of succeeding years has omitted the educational references, so our medical officers continue to pursue the even tenor of their professional ways without the light of publicity being thrown upon their early collegiate life. It may not be out of place to give the number of graduates among army surgeons of some of the leading medical schools in 1907 and 1912, for the purpose of showing the constant mutations in the service.

	1907.	1912.
University of Pennsylvania	47	44
University of Virginia	28	25
George Washington (Columbian)	27	32
Jefferson	17	26
University of Maryland	16	19
Harvard	9	9
Columbia (Coll. of P. & S.)	20	13
New York University (Bellevue)	14	12
University of Michigan	7	10
Georgetown	8	10
Johns Hopkins	5	8
Yale	7	5

In 1907 Leonard Wood, erstwhile army surgeon, was a major general in command of the forces in the Philippines. To-day he is chief of staff and supreme in the command of the army. This is a somewhat remarkable feat for a young man who took his M. D. in 1885 and on entering the army in 1886 probably never dreamed of commanding anything more formidable than a post hospital.

Another dominant figure in 1907 and until very recently, by the way, was Maj. Gen. F. C. Ainsworth, adjutant general, called general by his admirers and doctor by his enemies. He appears to have had plenty of both. He entered the army as an assistant surgeon in 1874 and was an ordinary medical officer until 1892, when he was made chief of the record and pension office. In 1905 he became adjutant general, He has been much in the public eye of late owing to disputes with his superior officers, and applied for retirement a few weeks ago. President Taft granted the application immediately.

We have little interest in the merits and demerits of his case. Our object is to show that a man of brains, like Gen. Ainsworth, may rise to high places in army life, even if he be a staff officer and not supposedly in line for a command.

In 1907 the dean of the retired brigadier generals was Gen. John F. Head, M. D., Harvard, '43, who retired in 1885. He has recently answered the final muster. Another prominent and much beloved medical officer, who has died since that register was published is Major James Evelyn Pilcher, editor of the *Military Surgeon*, and most popular in professional and journalistic circles. Still another is the former army private,

hospital steward, army surgeon and hero, Major James Carroll, who gave his life as a monument to the profession he loved so well.

Many of the men whose names appeared on the active list of the army's medical corps in 1907, have been transferred to the retired list to round out in peace and comfort their active and well spent lives.

A student of the army register can find much data of interest, such as the information that Lieut. Col. Joseph T. Clarke and Major Irving W. Rand, one of the contributing editors of the MEDICAL TIMES, spent some time at the West Point Military Academy before entering upon the study of medicine.

A surgeon who saw service for several years as a lieutenant of infantry is Major George D. Deshon. He was graduated A. B. from Dartmouth in '83 and from the Military Academy in '86, and was assigned as a second lieutenant to the 23d Infantry. After four years in the field he resigned and took his M. D., at Bellevue, later getting the same degree from the University of Pennsylvania. Dr. Deshon was appointed a first lieutenant and assistant surgeon in 1892, a captain in 1897, and a major in 1904.

Paradoxical as it may seem, not all the physicians in the army are in the medical corps. Aside from Gen. Wood and Gen. Ainsworth, Major George H. Penrose, of the quartermaster's department, graduated in medicine from the University of Buffalo in 1886, and was a brigade surgeon in the Spanish war. He was made a captain and quartermaster in 1901 and was promoted to major in 1909. He is now on duty at Fort Snelling, Minn.

An assistant paymaster general recently retired is Col. William H. Comegys, M. D., a graduate in medicine of Miami. Another retired officer of medical qualifications is Chaplain William T. Anderson, a graduate of the Cleveland Homeopathic College.

Two physicians are serving in the cavalry as line officers, First Lieutenant Rodman Butler of the 10th Cavalry, a medical graduate of the University of Pennsylvania and Capt. Delphy T E. Casteel of the 6th Cavalry. Dr. Casteel, who received his M. D. from the University of Maryland in 1885, entered the volunteer service as colonel of the 2d West Virginia Infantry in 1898 and was mustered out April 10, 1899. Three months later he became a captain in the 27th U. S. Infantry, and February 2, 1901, saw him a first lieutenant in the 7th Cavalry.

The artillery corps has two medical men in its ranks, Captain Russell P. Reeder, a graduate of Miami and Capt. George L. Hicks, Jr., an M. D. of the University of Maryland. Captain Reeder was a captain in an Ohio regiment in the Spanish war and became a second lieutenant in the 1st Infantry in 1889. He was transferred to the artillery and became a captain in 1905.

Capt. Hicks entered the volunteer service in 1898 as assistant surgeon of the 1st Maryland Infantry. In August, 1899, he became first lieutenant and assistant surgeon of the 38th U. S. Infantry, a volunteer regiment, and when mustered out in June, 1901, he was major and surgeon. A few months later, Dr. Hicks became a first lieutenant of artillery.

The sole representative of the profession in the infantry is Captain Ralph H. Van Deman of the 21st. He received his A.B. from Harvard in 1888 and entered the army as a second lieutenant in 1891. While serving as an officer, he studied medicine at Miami and took his M. D. in 1893. Captain Van Deman studied medicine for the satisfaction of possessing a knowledge of the art.

On the retired list of the army is an officer who was actuated by the same motives, Brigadier General Charles A. Coolidge. He entered the army as a private during the civil war, became a second lieutenant in 1864 and a captain in 1877. While a first lieutenant, General Coolidge studied medicine at the University of Wooster, and received his M. D. in 1873.

Another officer who was attracted by medicine is First Lieutenant William N. Williams, who is a retired infantry officer, now practising medicine in Washington. He enlisted in the 6th Indiana in 1861. He became a first lieutenant of volunteers before the expiration of the war and in 1867 was made a second lieutenant in the regular establishment. In 1878 he retired on account of disability and studied medicine at the College of Physicians and Surgeons, Keokuk, Iowa, receiving the degree of M. D. in 1882. Dr. Williams has been in medicine since that time.

A physician appears on the retired list who found army life more interesting than the practice of medicine, Lieutenant Colonel Valentine McNally, ordnance store keeper. He took his medical degree at Georgetown in 1867, was given an A. M. two years later and was honored with an LL. D. by his alma mater in 1889. In 1882, Dr. McNally was made ordnance store keeper with the rank of captain and retired with the rank of lieutenant colonel in 1903. He is now practicing in Washington.

Doubtless facts of similar import could be found by a careful inspection of the records of the Navy and Marine Hospital Service.

The American medical profession has every reason to feel proud of its confreres who serve in the great services of the government. They are officers and gentlemen and devoted disciples of Aesculapius.

Hepatopexy.

Hepatoptosis may be congenital or acquired, the former being accredited to absence of suspensory ligaments and other defects of the natural supports. Heavy lifting, pendulous abdomen, gall-bladder disease and pregnancy are mentioned as factors of the acquired condition. The disease is much more frequent in the female and very few cases occur in nulliparæ. There have been partial prolapses reported, from local hypertrophy of a single lobe in some cases, which A. Werelius, Chicago (*J. A. M. A.*, March 2) thinks should be considered as rather distinct from the condition here described. Thus far he has found only sixty-six cases reported as operated on, and only four of these in this country, including his own. These are tabulated and analyzed. The main points of his paper are summarized as follows: "In the sixty-six cases (including my own) operated on there were two males. The average age of the patients was 38 years. There were twenty-eight cases of total and thirty-eight of partial heptatoptosis. In the partial hepatoptosis the diagnosis was made correctly in twenty-three cases. The condition was once diagnosed as tumor of the gall-bladder, six times as right nephrotosis, and an uncertain diagnosis was made in eight cases. In the total prolapses a correct diagnosis was made in thirteen cases. Incorrect diagnosis of echinococcus cyst was made in four cases, one of tuberculous typhilitis, one of omental tumor, of right nephroptoptosis in three, kidney tumor in one and an uncertain diagnosis was made in five cases. The incisions used were lumboabdominal in five cases, transverse in twenty-two, through the outer border of the right rectus in nineteen, in the median line in five, through middle of right rectus in one, not given in ten and special laparectomy incision in four cases. Catgut was used in eighteen cases, silk in thirty, kangaroo tendon and silver wire in one each. In the rest either the liver was not sutured or kind of suture was not mentioned. Round ligament was sutured six times, gall-bladder twelve times, scarification was done five times and tamponade was used in twenty-three cases. Liver was sutured to abdominal wall in forty-eight cases, to costal arch in six, to peritoneum in one, to xiphoid appendix in one and in the rest the organ was not sutured or else not mentioned. Operative findings, outside of the liver prolapse were right nephroptosis in eight cases, general enteroptosis in seven (but must surely have been more); gallstones were found in five cases and gangrenous cholecystitis once. At least 85 per cent. of the total prolapses were in multiparæ."

Medical Expert Testimony

The testimony of physicians, testifying as experts, continues to receive the condemnation of those familiar with court procedure. It is apparent that the conflicting statements made by medical men on the witness stand lower the profession in the eyes of those men who should regard it highly. When medical expert testimony is mentioned to the average lawyer, he smiles and suggests that the conversation be turned into serious channels.

A prominent New York attorney, whose court experience is of many years duration, recently made the statement that no intelligent lawyer or juryman gives heed to medical testimony on account of the bias it invariably shows.

Medicine has a duty to itself to make such remarks impossible by adopting some standard that will not allow a physician to testify as an expert, unless he possesses the necessary professional and educational qualifications. The New York Academy of Medicine has taken steps to better this condition and the American Medical Association will undoubtedly give the matter early attention.

In order that the medical profession may see itself as others see it, when it assumes the role of expert witness, we have asked several well known members of the New York Bar of wide experience and high standing, to contribute their views on the subject of expert testimony.

ELIMINATE THE HYPOTHETICAL QUESTION.

JOHN L. LOCKWOOD, B. A.,
of the New York Bar.
New York.

Expert testimony is the outgrowth of the modern complexity of litigation, which is itself the outgrowth or reflection of modern complexity in business and life itself. In every department of the law the necessity has arisen of presenting evidence of intricate problems to judges and juries, and this evidence is obtainable only from students of those problems, versed in the theories of their solutions as well as in the applications of the theories. It is worth while noticing that the necessity of this species of evidence arises from the legal fiction of the ignorance of judge and jury of every fact, except the most general commonplaces, not proved before them by competent testimony. A class of witnesses, therefore, has come to be constantly before the Courts, to elucidate not only questions of medical science, but questions upon every other topic which may be the subject of special knowledge. The law sometimes requires expert testimony to explain itself.

There have also arisen, certainly a popular mistrust of such testimony and, to some extent, a judicial repugnance to believe experts of any kind. So far as the latter exists it may be laid largely to judicial idiosyncrasy or impatience; but the former, the popular hostile feeling, seems clearly founded upon the fact that experts are paid, and often heavily paid, by the party to the litigation for whom they testify. It is confidently believed by many that money only is necessary to procure a litigant the opinion evidence needful for his case. Naturally the remedy is thought to be the creation of a Board of Experts paid by a non-interested party, the State.

We may pass by technical difficulties as to the manner of appointing and selecting the members of such a Board, objections to the constitutionality of such a measure, and pass by also what is perhaps the insuperable obstacle, namely, the great number of Boards which would be required to secure exact impartiality in every field of expert knowledge. There should be some basic principle of reform by which to effectuate the presentation in Court of a fair approximation of the facts and theory of any more or less scientific problem. By the present methods, in every important cause, there arises a Babel of opinions. The existence of this modern Babel is, of course, largely due to the divergence of views presented upon any subject where men are permitted to offer their opinions, but it is partly caused by the present legal procedure surrounding the presentation of expert evidence.

Expert evidence is of two kinds. In cases where the expert has himself observed all the facts he may give his opinion based upon his observation of those facts. Where the expert has not observed the facts he must give his opinion only in answer to a hypothetical question framed upon an assumption of the facts as proved by other witnesses. Although the expert may have heard all the evidence he cannot give his opinion based upon what he has heard, but only upon the facts assumed in the hypothetical question. In consequence each litigant presents his facts with one eye directed to this hypothetical question, and frames his question with his other eye directed to its answer. The Sphinx never propounded enigmas equal to these hypothetical questions of our day. They have been known to take a day to ask. The opportunity this cumbersome method affords each party to suppress unfavorable features, to manipulate the tone of the assumed facts, and generally to befog the theoretically ignorant judge and jury is in fact the real basis for whatever well-founded mistrust there is of expert testimony. It is a striking example of the distance the law can be carried by its technicalities from the realities of life.

Some progress towards reform might be attained by prohibiting hypothetical questions. In their place the expert might be required to be present in Court and to listen to all the evidence. He would then be, as to the facts, in the same situation as the judge and jury. He then should state his opinion, but his opinion should be disregarded unless he followed it by a statement of the facts in evidence upon which his opinion was based. For the honorable expert and the honorable lawyer and the honest litigant this course would hold no terrors. Possibly these three of the Graces are never united on the same side in the same cause. The efficiency, however, of many of the present shufflings and shiftings of astute experts, lawyers and litigants would be diminished. The expert who omitted salient facts would be ruined on cross-examination; the lawyer who now assorts the assumed facts to accord with his client's claim would see this power taken from him; the litigant could not buy a ready-made opinion because he could not be assured that only facts favorable to him would be the basis of his expert's opinion.

It should not be supposed that this suggestion aspires to be a solution of the whole vexed question of expert testimony. It presents only a phase, but a phase which applies to expert testimony of every character. Certainly, however, judges and juries might thus obtain clearer conceptions of the workings of the expert mind, and be better able in the light of their own common sense to weigh the pros and cons of the complexities daily presented to them, than by means of the Gargantuan hypothetical questions now in vogue.

Perhaps another factor at the bottom of the mistrust of opinion evidence is the jury. Our ancient tradition that juries can do no wrong is going the way taken by the maxim that the King could do no wrong. It is becoming more generally realized that all men are not created equal, and that the faculty of attention and the ability to follow the specialist's explanation of intricate investigation are not bestowed alike upon all men. The mind unused to considering scientific methods cannot easily understand them. The average juryman is not trained for mental gymnastics, and nothing less is requisite if the facts of a long and complicated trial are to receive just judgment. One of our United States Judges has said as much.

It is the frequent experience of lawyers to learn from jurymen after a trial that their verdict has been determined by some fact irrelevant and unimportant, or that the facts were pretty much ignored.

There is room for reform here also. Juries might be selected for certain, if not for all, causes only after a test of their mental equipment. Dipping deep into the future it is conceivable that such tests might be made as exhaustive as the possibilities of experimental psychology permit. Even now we do not admit the blind or the deaf to our juries, and for some cases panels supposed to be especially intelligent are directed to be drawn. There is equal reason for excluding those who fail to pass examination into their fitness to follow and understand the abstruse problems of science which may be presented to them. When judges and juries and experts are brought more nearly to the same plane of trained intelligence, our confidence in the system of expert testimony will doubtless be less often disturbed than it is under the rough and ready, archaic and cumbersome methods at present pursued by the Courts.

"EXPERT" TESTIMONY

KNOWLTON DURHAM, A. M., LL. B.
of the New York Bar.
New York.

One who has followed the trial of cases involving medical testimony can hardly escape the conviction that there is something radically wrong with the present system of presenting the medical facts of the case to the jury. The function of the jury is to decide what are the facts. The object of the trial is to present to the jury the evidence upon which the facts may be determined, so that having arrived at the truth it may apply the law as explained by the judge and reach a just verdict.

The testimony of eye witnesses with respect to the happening of any occurrence will of course vary very materially. A dozen persons witnessing an accident will invariably, provided they have not recited the occurrence in each other's presence, describe it in a dozen different ways. I have in mind a case now awaiting trial in which two of the witnesses have made affidavit that a wagon, from behind which a boy ran in front of an automobile, was proceeding in a northerly direction up the avenue; three have stated it was backed up to the curb and one that it was going toward the south. None of these statements is willfully false, but is due to the limited power of observation of the average person whose attention is suddenly called to an occurrence happening quickly. But such testimony is valuable nevertheless. It is the best evidence of what actually happened that we can obtain. Faulty as it usually is, a reasonably intelligent jury can form a fairly reliable picture of what occurred. The apparent intelligence or ignorance of the witness, his power of observation, his appearance of truthfulness or otherwise, his interest in the case can all be considered and weighed together with the probabilities surrounding the occurrence, and, provided only that sympathy, bias and self-interest are absent from the juryman's mind, the verdict will probably be just—at least it will be as nearly so as can be secured by human agencies.

But how is it with so called "expert" testimony, when the point involved requires the evidence of a person upon a question of scientific truth? Does our present system give us the benefit of the best evidence obtainable on such questions? Far from it. The physician is called to the witness chair when there is a dispute as to the nature or the extent of an injury, or a question as to the physical condition of the patient or subject of his examination, or a difference of opinion as to whether the condition could or did result from the alleged cause. He has either made a careful personal examination of the subject of his testimony or is testifying as an expert upon a definite statement of facts propounded to him by counsel. His opinion is given after an opportunity for careful deliberation.

How then do we have presented to us in nearly every "accident" case and in every other kind of case involving medical testimony, opinions of so-called "experts" which leave the jury nothing definite as a guide to the facts except the impression that the experts for both sides are testifying for hire. Of course physicians will disagree about many things, but must they always disagree about the essential things that the jury should have clearly and truthfully explained to it? Lawyers disagree as to what the law of any case is, but the jury does not have to take the law from the lawyers. An impartial legal expert tells them what the law is and how to apply it to the facts. Why should not an impartial medical expert tell them what the medical fact is, or what the acknowledged authorities have to say about a particular condition?

A woman is injured by a fall; permanent internal injuries are claimed to have resulted. She is nervous, irritable, cannot sleep, etc. etc. Was the fall the cause of her present condition? Is her present condition what her lawyer says it is? Will she recover when the excitement of the litigation is over? In the hands of a skillful physician, seen more often about the Court corridors than in his own office or in the hospital, it seems she has very little left to live for. Death were far preferable to her present pitiable condition. Perhaps she collapses in the witness chair and has to be taken from the court room. There is great excitement and the jury is visibly affected. Along comes the defendant's troop of "experts." Their knowledge, experience and reputation shatter the forces of the plaintiff. The jury retires—and returns with a verdict for the plaintiff for $15,000. Or the scenes may be shifted and the verdict be for six cents. Both are actual occurrences, the facts being very similar. In neither case, I am convinced, did the jury give very much weight to the medical testimony. It took into consideration the fact that the plaintiff's physician probably had a contingent interest in the case and that the defendant's "experts" were giving the same performance every day for hire; and it swallowed their opinions cum grano salis.

Suppose a physician well qualified, independent and disinterested had told the jury what he had observed upon his examination, what in his opinion the result *would be,* without any "assume, Doctor * * * would such a state of facts be a competent producing cause, etc." A jury with such testimony before it could decide the medical facts intelligently and with far more justice to the litigants than will ever be possible under our present system. Why not, if we are seeking the best evidence—and the whole law of evidence is based upon that assumption—give the jury what our common sense tells us must be the best evidence—the unbiased, unbought, skilled testimony of an impartial, competent authority?

SELECTION OF EXPERTS BY A MEDICAL BOARD.

FREDERICK P. WHITAKER, A.B., LL.B.
Lecturer on Law in Columbia University.
New York.

Probably the reason that the testimony of expert medical witnesses does not carry more weight, at the present time, is due to the fact that it seems to be generally believed that the favorable opinion of medical experts can be purchased by either party to a litigation. Certainly, neither party will call a medical expert unless he knows, in advance, that the testimony given will be favorable to him.

The object of the proposed act appears to be to secure expert opinion, as a guide to the Court, which will be known to be unprejudiced and therefore become an efficient means to the ascertainment of the truth. That this result is desirable is self-evident. It seems to me, however, that the selection of such experts should be left to some representative medical board, which would be in a better position than a judge of the court to select such men with the sole view of their competency.

EXPERT TESTIMONY.

JOHN L. LINEHAN, LL. B.
Member New York Bar,
New York.

The use of testimony given by men specially trained and qualified upon special topics or matters has become a well founded adjunct to the trial of cases, civil and criminal, in this country.

Certain matters are taken to be matters of common knowledge, and need no distinct proffer of evidence to give them value with the court or jury.

The general law of the land, for instance, is commonly presumed to be within the knowledge of all the persons within the jurisdiction. The laws of a foreign country, however, must be specially proved on trial by the testimony of some one who has intimate personal knowledge of the same.

Thousands upon thousands of cases are tried in the courts of the United States every year in which so-called "expert" testimony is offered, not only in criminal trials but in probate practice, negligence cases, and actions for breach of contract

Handwriting experts have figured prominently in noted murder trials in recent years, and their evidence has been, in many cases, easily recalled, potent for conviction.

Experts regaled the world with the matter of the absolute identity or non-identity of a famous violin a few years ago in New York City.

Expert physicians testify as to the nature and extent of the plaintiff's injuries in suits for damages.

Learned men give their testimony as to critical conditions of the health of convicts seeking pardon or commutation of sentence.

A railroad train dashes into the Hudson River because of a broken rail, and the broken rail goes forthwith into the hands of experts for examination as to the cause of the break, and their conclusions will later, probably be aired in court.

In short, expert opinion may be, and is, in some form, offered every day in trials civil and criminal. Millions of dollars are paid out yearly on verdicts influenced largely by expert testimony, and criminal convictions are based on the same kind of testimony.

Where expert testimony is proffered on one side, it is generally met by expert testimony on the other. The result is that we see in a large number of cases, a mass of testimony which merely represents the personal belief of the witness based upon a more or less limited range of the concrete, physical evidence. The divergence of opinion does not necessarily demand that one side is right and honest and the other is wrong and dishonest. This follows no more than that a human being must be of white complexion with blue eyes.

A veteran of the Spanish war has been during the last year or two tossed about the country, most of the time in a box car, because a number of able men said he had leprosy and another equally able and positive number of men said he didn't have that disease. Each side believed it was right no doubt, and the beliefs entertained were sincere.

It is in the cases, however, in which insanity is a dominant factor of attack or defense that expert testimony arrests the attention chiefly. Elderly men and women who have accumulated and managed to retain a substantial part of the world's goods are peculiarly liable to reveal indubitable symptoms of hopeless insanity. Some quondam malefactor of great wealth turns from his evil path and finding little comfort in the creed that he is destined to be damned, he wildly embraces some modern liberal faith perhaps. This is a very bad sign and invariably betokens insanity, if his belief affects his expenditures.

Again an elderly widower or bachelor may marry. This man is surely insane, as a swarm of distant relatives realize. In either case plenty of positive unimpeachable testimony is offered by experts pro and con. The victim is shown up in his real colors. What seemed to be good business judgment and acumen, was only the cunning of the paranoiac. We find that the only reason the true character was not revealed before is that presumably the subtle scheme of the disordered brain had not time to develop in the sixty or seventy years past.

It is curious how neither relatives nor physicians realize the progress of the dread disease where the sufferer is wealthy, until the safety of an estate is threatened, or some prisoner is standing before the bar of the court charged with murder of some fellow being.

It is with cases like the latter that the public generally associates the idea of expert testimony, and the name medical expert. In most cases the crime was committed in a cowardly manner, and in nearly all some woman's name is dragged in as an excuse.

It is again curious to observe, that no matter how much his neighbors may suspect his sanity, where a good alibi is forthcoming, or a good case of self defense may be proved, "experts" to show insanity are lacking in the defense of criminal cases.

Some longshoreman who has been a trifle indiscreet with the cup that cheers, may require the aid of a half dozen husky policemen to get to the station house. He shows no signs of insanity; he was only drunk. A degenerate millionaire wrecks a tenderloin resort, regardless of cost. That is a sign of paranoia. It is discovered that as a boy the same person was backward as a student. That is a sign of insanity. He was cruel to smaller boys. That is an undoubted sign of insanity. There is no proof offered, strange to say, of his cruelty to larger and stronger boys.

A few months ago in a neighboring state, in the course of a murder trial, a witness for the defense testified that the prisoner, at school, had been cruel to and beat smaller boys.

"Did you ever hear of his acts of cruelty to larger boys?" was asked by the skeptical district attorney. There was no such record. The verdict was guilty in that case.

There is no doubt that if Jesse Pomeroy, the boy murderer, was on trial to-day and had wealth at his disposal, abundant expert proof would be offered that he was a paranoiac. It would be profitable to look into his case and find out how his mind has been affected by nearly forty years of solitary confinement in Charlestown prison.

The public at large to-day doesn't interest itself very much about the value of expert testimony in criminal trials. There is a feeling that it is largely superficial, and a consequent disregard for it. By purchasable is not meant that it is proffered for money. It may be colored by sympathy, neighborly ties, the curious result of individual ways of thinking, or any one of a thousand ways.

So long as the home and family exist as institutions the outsider who violates their sanctity will be an outlaw and will expect whatever fate befalls. So long as the "unwritten law" prevails in the country, insanity will be paraded as a defense.

It would seem, however, that expert medical testimony in criminal trials should be given only by physicians with attainments prescribed by a general law. They should be paid a compensation fixed by law, both for prosecution and defence in each case in which they appear, and should be barred from recovering any additional fee.

Their opinions should be based on personal observation and investigation whenever possible, and the hypothetical question eliminated or much modified.

Above all there should be no such thing as an arbitrary exclusive body of experts who would independently of prosecution or defense present their conclusions to the court and who only could testify.

If a defendant, for instance, chose not to avail himself of the services of an official expert it might prejudice his case unfairly.

The selection of experts should not even remotely be controlled by the court or the prosecution, nor should their compensation depend upon official favor.

In any event the jury should be the final absolute arbiters of all the issues. We should not be led astray by sentiment nor by undue emphasis of any particular feature of a case.

As long as the law punishes certain human acts as crimes the main question will be as to the existence of the specific act. There must remain always some arbitrary line beyond which excuses will not avail.

DISINTERESTED EXPERTS NEEDED.

LEONARD G. MCANENY, A. B., LL. B.,
New York.

I believe in any action that would improve the conditions under which medical expert testimony is given and received in our courts. Under the present practice, the average jury seems to take a physician testifying on one side of a case to be retained by the interested party in much the same way as the attorney is retained, and the jury apparently believes he is bound to support his client in all things. Accordingly, the jury is handicapped in getting at the exact value of the evidence given by the medical expert and is apt to be skeptical as to its real impartial worth. At best, the jury realizes that the physician testifying, although absolutely honest in his views, belongs to a class holding opinions on the subject under discussion favorable to the case of the party for whom he testifies. The jury knows that the expert has been selected from that class and hired to testify simply because he belongs to that favorable class or school, rather than to the one holding the opposite opinions on the subject, which latter class the party to the action has carefully avoided in selecting his expert. If the opposing party can produce an expert of the latter class to contradict the first, the jury is put in a quandary, and, being human, probably allows one to neutralize the other, and decides the case without any real enlightenment as to the medical features involved.

This may mean a grave miscarriage of justice, especially in a criminal case where there is real merit in a defense built up by medical testimony, and anything that could in general put such testimony on a sound and practical basis would be most valuable.

The testimony of a medical witness that the members of the jury believe, because of the method of his appointment, to be disinterested and not drawn from a particularly opinionated class of experts, would naturally be received by them with open minds and would be given actual value. In fairness to the medical profession, some such plan should be provided, for the difficulty in a great many cases probably lies in the attitude of the jury.

In providing such disinterested experts, however, great care should be taken in the method of their selection to assure that they be experts and in every way disinterested. An eligible list should be prepared of men who have passed a rigid examination and have qualified in length and scope of experience and other ways. Or the list might be made up of men nominated by the Academy of Medicine or other recognized representative association of the medical profession. Possibly some combination of these two methods might be worked out. Appointments should then be made from such a list. Differences of opinion might easily arise as to what official or official body should be the appointing power, but the Supreme Court would seem to be well qualified to appoint. But I believe that the value and success of the plan depend very largely on the method of selecting the experts.

Dr. Carl von Noorden, of Vienna, has accepted the invitation of the New York Post Graduate Medical School and Hospital for a series of lectures on problems of Metabolism next October.

The Colon Bacillus.

R. T. Morris, New York (*J. A. M. A.*, March 2), suggests that the colon bacillus may be at the present time the chief regulator of population and cause of the decadence of old age. Bacteria, which formerly caused disastrous epidemics, are practically under control through the progress of preventive medicine, but other bacteria, and especially the one in question, are still carrying on Nature's plans of reducing excessive population. The reason that the activities of this group of bacteria have been so long ignored is that the methods of search for them are of recent development and do not yet cover all the field. While we recognize the destructive activity of the colon bacillus in gangrenous appendicitis, we do not so often trace its activity from this source to distant parts, such as infections of the pylorus or duodenum. From his point of view, the colon bacillus is often the original malefactor in these cases, though the adhesions that it produces in the upper abdomen are often overlooked by the physician. He believes it to be the frequent cause of ulcers of the stomach and duodenum and its activities in gall-stone diseases have also been recently recognized. Pancreatic disease and diabetes can also be thus produced, and the proliferation of connective tissue which it causes is, he suggests, also seen in most cases of arteriosclerosis. The toxins it produces also attack the nervous system, and it may thus cause neurasthenia. If we are to assume that the colon bacillus is the cause of arteriosclerosis, we can easily rank this organism with the tubercle bacillus in increasing the death-rate. Experimental injection of the colon bacillus into the circulation has caused spinal disturbances, and Dr. H. G. Harris has found it abundant in the urine of a patient with infantile paralysis. One of these disorders, colon bacillus intoxication and infantile paralysis, may prepare the way for the other. One of the largest groups of cases in which the influence of the colon bacillus is overlooked by clinicians is the infections of the kidneys, and this is specially unfortunate since we can so readily control its growth in the urine by hexamethylenamin and benzoate of soda, as has been shown by W. H. Thomson. From the rectum it may readily affect the neighboring organs through the urethra and the vagina and be the cause of intractable leukorrheas, tubal infection, urinary incontinence and sterility. Its effects are sometimes so remote that it is not suspected, and Morris mentions as an instance a case of chorioiditis cured by operation for appendicitis.

Micrococcus Catarrhalis.

It must be remembered there are two entirely different microorganisms, morphologically alike, capable of causing inflammation in the genito-urinary tract.

Ayes, of New York, goes into the subject at length (*Am. Jour. Surg.*, March, 1912) and finds that:

1. Demonstration of a Gram negative diplococcus within the pus cells of a discharge from the urethra is not proof positive of a gonococcic infection.

2. The fact that a man has a urethritis which shows Gram negative diplococci crowding the pus cells is not proof positive of recent exposure to gonorrhea by copulation.

3. Not only is a microscopic examination necessary in all cases of urethritis, but in a certain proportion a culture test is imperative.

4. All cases of urethritis beginning as a subacute inflammation should be regarded with suspicion.

5. Just because a urethritis is very mild at the start it should not be classed as a micrococcus catarrhalis infection until it has been proved so by culture—gonorrhea is too serious a disease to be excluded without thorough investigation.

6. The micrococcus catarrhalis is not a germ of slight pathogenicity, but is capable of causing serious and even dangerous inflammation.

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THE IMPORTANCE OF GOVERNMENT MEDICAL MEN.

A considerable part of this number is given over to a discussion of the medical corps of the Army and Navy, and the Public Health and Marine Hospital Service. We have long felt that these splendid organizations have not received the attention from the American medical press which their unusual merits warrant. It may be in a way due to the officers themselves, for many of them are not given to the production of medical articles, but we think the journalists have, to a large extent, overlooked this great body of highly trained medical workers.

As a class army, navy and marine hospital surgeons are better educated and better trained than any other branch of the profession. The examinations for entrance to these corps are unusually severe. Many prospective candidates cannot pass the preliminaries and consequently do not get an opportunity to show their knowledge of the professional part of the work. We recall a most capable young physician, well educated along literary and scientific lines and thoroughly trained in medicine, who was ambitious to be a naval surgeon, but he failed in geography and did not reach the medical examiners. He had concentrated his mental efforts on purely professional subjects and had not considered the necessity of being a master of the three R's as well, all of which goes to show that the governmental surgeon has a broad education in subjects not distinctly medical.

Being therefore a master of his profession he should be regarded by his confreres with pride and by the medical editor as potential contributor of value. The government especially encourages its surgeons to pursue original investigations and some of their findings have been noteworthy. The cleaning up of Cuba and the Panama Canal Zone will always stand as a monument to the efficiency of the army's medical department. The eradication of bubonic plague in San Francisco by Surgeon-General Blue and his associates in the Marine Hospital Service was but a repetition of the herculean efforts of that service in times past, such as the controlling of the yellow fever epidemic in New Orleans.

We emphatically believe that the best interests of the people at large would be served if more reports of research work performed by army, navy and marine hospital surgeons were published by general medical journals. Now most of these valued papers are published in the *Military Surgeon*, the *Naval Medical Bulletin* or the medical reports of the P. H. and M. H. Service. Excellent as these publications are, they reach only a small percentage of the profession and as a result the findings of the surgeons are only made known to the great majority of the medical reading public through the medium of abstracts.

Surgeons of the army have recently accomplished results in the treatment of beri beri in the Philippines, which are as yet unknown to the bulk of the profession, although the achievement will be viewed with intense gratification. Beri beri had long been a scourge in the islands and the native soldiery, the Philippine scouts suffered intensely. The army surgeons on duty with the scouts in 1909 laid the cause of the disease to the polishing of the rice, one of the principal articles of diet among the soldiers. They thereupon cut down each man's daily ration to one pound of rice and further insisted that the rice be unpolished. As a result beri beri seems to be only a memory among the scouts. In 1909 there were 836 cases, in 1910 there were 189 and the number dwindled in 1911 to five.

In reporting to the War Department on the wiping out of this disease, Major-General J. Franklin Bell, commanding the Philippines Division, pays a warm tribute to the medical officers in his command.

By opening its pages to contributions from governmental surgeons, the MEDICAL TIMES anticipates that other journals will take similar action, so that the body medical may profit from the research work of our splendid body of military, naval and public health surgeons.

A NEGLECTED SERVICE.

In times of stress, when the patient is desperately ill, the family supplicate the attending physician to save the valued life. He is assured that money is no object; the wealth of the Indies will be his if he restores the loved one to health. When, through the skill of the medical man and the assistance of Providence, the patient recovers, the promised wealth fades away into an iridescent dream. Often times the hard-working and much-worked physician is compelled to sue to obtain his fee.

Such is life, for even our paternal government is guilty of the same offense. When plague, yellow fever and other scourges are rampant and people are dying by scores, a hurry call is sent for the Marine Hospital surgeons. They are rounded up from all points of the compass and sent to the infested spot. They clean out, clean up and see that things are kept clean. Brooking no interference, these representatives of the Federal government ride rough shod over the legions of disease. They bring order out of chaos and eventually restore the infected locality to its accustomed state of health.

While accomplishing these splendid results the news-

papers laud the surgeons to the skies. Yet after the smoke disappears they are forgotten. Here is the tragedy. The surgeons of the Public Health and Marine Hospital Service constantly brave a death infinitely worse than that from bullets. They expose themselves to dangers, which the civilian surgeon rarely meets. They combat pestilences in foreign ports, in plague-stricken cities in the tropics, they fight loathsome diseases of every nature and are at the forefront with danger. And for what? Surely not for money, for the pittance paid these men is absurdly meager. We applaud the Marine Hospital surgeon who goes down to a filthy Central American town, reeking with yellow fever, to safeguard the health of the citizens of the United States. His salary is from $1,500 to $2,500 a year, and he works from 10 to 15 hours a day for 365 days every year, unless with good fortune he is able to get a short furlough.

Not only does this underpaid and overworked surgeon guard us against the invasion of the bacterial hosts. He is one of our keenest research workers. He has transmitted measles from man to monkey and an antitoxin against measles will result. He has devised an embalming fluid that sterilizes and preserves the human body. He has invented a sanitary privy vault for country houses, which will go far toward preventing the pollution of the water supply, with accompanying typhoid fever, etc. He has determined how long the typhoid bacillus will live on vegetables and in oysters and he has studied the typhoid situation in Alabama, Arkansas, Illinois, Iowa, Virginia and Washington, and in the environment of the Great Lakes. He is making discoveries of importance in the study of pellagra, uncinariasis, hook-worm disease, tuberculosis and tick fever. He will soon produce an antitoxin against leprosy, following the cultivation of the lepra bacillus on artificial media at the Leprosy Investigating Station in Molokai, Hawaii. He has examined during the past year over 1,000,000 immigrants and rejected over 27,000 of them, thus keeping that many mental and physical defectives from eventually demanding charity at our hands. He is doing work every day that civilian physicians cannot do, for the civilian has not received the necessary training.

But where is the recompense? The Marine Hospital surgeon is limited to $2,500 a year, with a little longevity increase and commutation for quarters. The country physician who does not have a practice of $2,500 complains that times are hard. He lives where that bugbear, the "increased cost of living," has not gotten in its deadly work to the extent it has in the cities, but the underpaid government surgeon is stationed where living is the highest.

Why should not the surgeons of the U. S. P. H. & M. H. S. receive salaries equal to the medical officers of the army and navy? No one knows. The fact is the service has been neglected. Congress has busied itself in what it deems more important matters. That *ignis fatuus*, the tariff, has so exhausted the vocabularies of those faithful Congressional patriots, who are trying to "make a hit with the folks back home," that when the medical profession endeavors to pass a law that will benefit the health of those same folks back home, the Congressional throats suffer from so violent an attack of laryngismus that nothing short of a laryngotracheotomy will permit them to speak above a whisper, and by the time the wound has healed the vote has been taken and the bill buried under six feet of oblivion.

We hear much about the pork barrel, although being presidential year the cover is supposedly kept tightly in place lest the odor of the decomposed contents perfume the air of reform, to the danger of the progenitors of the barrel. Being unversed in the art, science theory and schematism of politics, we are unfamiliar with the most effective mode of entry to the pecuniary depths of the aforesaid porcine barrel, but we humbly suggest to those physicians seeking to have laws passed regarding the health of the nation, that if they affix the bills as riders to a bill calling for public buildings in Crooked Bend, Kan., and Whatsitsname, Penn., or for dredging a five-foot bayou in Arkansas and a three-foot brook in Vermont, so that the battleships named after those commonwealths can float on the placid, watery bosoms of the bayou and brook, they will have no difficulty in passing their bills.

Seriously, Congress has neglected and is neglecting many measures for the hygienic welfare of the nation which are of the utmost importance, and it would seem that the only way of obtaining justice is to arouse the common people to the necessity of these reforms.

One of the bills which ought to pass is that providing for an increase in the remuneration of Marine Hospital surgeons.

Every physician should, out of respect for the magnificent work the service is doing for the profession of medicine as well as for humanity, write his Congressman and Senators and urge upon them the importance of supporting the bill.

If there were more unanimity in the medical profession much more might be accomplished with the national law-making bodies, and we can only offer up our supplications that some day in the not distant future we "may cease our bickerings and be at peace." When that medical millenium comes the profession, official and civilian, will come into its own.

THE DUTIES OF A SURGEON GENERAL.

Comparatively few physicians realize the enormous burden carried by the surgeon general of one of our great medical services. Although each one has its own peculiar conditions, they have many duties in common and it will not be amiss to study the work which the head of the navy's medical corps, Surgeon General Stokes, is carrying out. In the first place he is responsible for the health and medical welfare of more than 100,000 lives, 50,000 of which are of the commissioned and enlisted personnel of the regular navy. His clientele embraces large bodies of workingmen at yards and stations, and at various places (such as the Island of Guam with its population of 8,000) entire communities in every climate and the most remote countries.

The administration of this far-reaching work requires an intimate and varied knowledge of local conditions peculiar to the entire world. To carry out this work the surgeon general has under his direction a corps comprising about 1,700, including medical officers, nurses and attendants. There are under his direction 17 large general hospitals, constituting one of the largest hospital systems in existence, and which, at the present time, are being rebuilt, renovated and reorganized, so that the navy is to-day, under the direction of the surgeon general, one of the largest hospital-building organizations. In addition to this, every battleship has the equivalent of a small post hospital to be equipped, organized and maintained, and every ship down to the torpedo boats and submarines has its medical and hygienic features to be provided for and most carefully watched. The success of a military body is recognized to-day to be primarily assured only when the health and hygiene of its personnel are strictly safeguarded. Vast questions of supplies and the transpor-

tation of the sick and injured, both in peace and war, must be most carefully worked out, and it is in this field that the surgeon general is making special endeavor along lines hitherto unthought of and on a scale never before attempted to protect and safeguard the nation against disaster. He has opened up the question of the purely military duties of medical officers, and is solving as rapidly as may be the many scientific and professional questions leading to the military efficiency of the personnel in time of battle, with the idea of preventing disabilities and safeguarding the physical standards of many of our most valued men; for example, such problems as arise in turrets during action from gases, smoke and other by-products of explosion, the vision of gun-pointers, the effects of heat, artificial light and ventilation, and other complex sanitary features peculiar to the crowded condition of modern battleships; also the safeguarding, transporting and care of four or five thousand injured which might be expected in any of our large fleets in a great naval battle. The field of work here is enormous, and presents questions most difficult of solution, many of which have never as yet been considered.

For further safeguarding the health of his officers and men, Dr. Stokes has given careful thought to the subject of athletics as it affects the personnel of the navy, and our readers will recall with interest his last report on this subject to the Secretary of the Navy. As a result of that report the MEDICAL TIMES in its February and March numbers published a symposium on the "Effect of Athletics on Young Men," the contributors to which included the leading medical directors of the great universities and colleges of the country. Many new thoughts were brought out and great benefit to young men will result. If the college journals and daily newspapers in all parts of the country, which treated the subject in their editorial and news columns, are to be believed, effective and far-reaching reforms will grow out of the TIMES' symposium. Those who profit from these reforms have reason to be grateful to Surgeon General Stokes, whose thoughtful report gave rise to the subsequent valuable articles on the necessity for changes in athletic training.

To properly carry on the work of the navy's medical department, the medical personnel must be carefully selected and schooled in medico-military matters, and to this end schools of instruction for medical officers, nurses and attendants must be maintained and extensive laboratories for scientific and professional research kept up. As our fleets, both in peace and war, are often in isolated situations, hospital ships and transports must be operated, providing all the facilities of large metropolitan hospitals, with specialists in surgery, eye diseases, tropical medicine, X-ray work, etc., etc., and to carry supplies and equipment for any expedition ashore or afloat that the immediate necessities of war may demand.

This gives some slight idea of the extensive and manifold duties that must devolve on the shoulders of the chief medical officer of the navy, and for which Doctor Stokes was selected by the President and the Secretary of the Navy.

The duties of Surgeon General Blue of the Public Health and Marine Hospital Service and Surgeon General Torney of the army differ in detail, but each one has large numbers of lives given over to his care. That they are faithful to the trust imposed in them is too well known to need comment. Suffice it to say that never have the services been under the direction of more capable, painstaking and efficient officers than Surgeons General Torney, Stokes and Blue.

A FIFTH YEAR OF MEDICAL STUDY.

It is quite generally agreed among thinking men that our present system of medical education is lacking in essential details. By far too much work is crowded into the four-year curriculum. Our embryo physicians are taught not only the fundamentals of medicine, but a smattering of the specialties. They get a taste of ophthalmology, otology, laryngology, gynecology and the like, with the result that many of the young men only touch the medical high spots. To make a bad matter worse a considerable percentage of our graduates enter practice immediately after graduation, with no hospital work other than that gained while attending clinics.

In no profession is practical experience of such vast and lasting importance as in medicine.

There should be a law rigidly enforced in every state that no man could enter the practice of medicine until he had completed at least one year of hospital service.

In foreign countries the medical course is usually five years, the last year being given over to clinical work in hospitals and laboratories. For that reason the new graduate abroad is generally quite thoroughly equipped to take up the serious work of a medical practitioner.

In America we have been lax to the extreme in our medical educational requirements. Many of the physicians of to-day obtained their diplomas after "attendance upon two courses of lectures." Thousands of them were graduated after three years of study and only within the past fifteen years have colleges been demanding four years.

We have no hesitancy in stating that the average young man cannot possibly properly equip himself for the successful practice of medicine in four years. We emphasize "the average young man." There are mental phenomenons who are graduated from college at the age when most boys enter, and so there are others, unusually endowed with ability, who can completely prepare themselves for their medical life work in four years, but they are the exceptions which prove the rule.

Every medical college should have a fifth clinical year—a hospital year. Believing this so thoroughly it is interesting to note that the University of Michigan, always a leader, is arranging for such an addition to its course.

Dr. Reuben Peterson, of the Michigan faculty, in a paper read before the recent Conference on Medical Education, reiterated his belief in the hospital year and told of the efforts of a committee from the faculty to arrange for the additional work. After considerable study the faculty of the university has placed sixty-three hospitals in different parts of the country upon an approved list and it is the hope of the Michigan authorities that every graduate of the medical school will pursue his clinical studies for a year in one of the approved institutions.

Seeing the necessity of having such a movement national in scope Peterson suggests that the Council on Medical Education inspect all hospitals and properly classify them, so that Class A hospitals would receive students from Class A medical schools. Class B hospitals would get Class B medical school graduates, etc., each school being graded with each hospital. While such a classification would call forth protests from the institutions rated under the first class, it would stimulate every hospital and medical school to so increase its requirements and advantages

that the educational status would be decidedly bettered. Dr. Peterson concludes by saying:

"The fifth, or intern, year, must come sooner or later. The withholding of a diploma until the fifth or clinical year is satisfactorily completed is essential to good discipline and efficient work, and until it is a part of the curriculum medical educators will not take as vital an interest in it as in the first four years of the course. The fifth year cannot with any fairness be made compulsory, however, until the medical schools are better informed regarding existing hospital intern conditions. Whether students should obtain their hospital positions by faculty appointment or by competitive examinations is a mere matter of detail. Some hospitals believe they secure better interns by leaving the selection to the faculty who have known the students for four years. But competitive examination may be a better system. A feature worthy of discussion will be the desirability of urging the student to take his clinical year in some distant hospital where he could absorb new ideas and see what others are doing. This would mean a broader education without impairing his loyalty to his own institution. Thus it would be possible to adopt one of the good features of German medical education, in the place where in America it rightly belongs, in the fifth or clinical year. If the hospitals be shown the way they will be glad to follow, for above everything else they desire good interns. On the other hand, the latter desire good hospitals and the medical school is vitally interested in both."

What medical school will be the first to follow the example of the University of Michigan?

General Scientific

A CONTRIBUTION TO THE STUDY OF THE POSSIBLE AGENCY OF THE BEDBUG, CIMEX LECTULARIS, IN TRANSMISSION OF ACUTE POLIOMYELITIS FROM MAN TO MAN.

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It has been said by the Committee of the American Medical Association on methods of control of poliomyelitis[1] that epidemiological data from which to draw inferences as to the transmission of poliomyelitis are scant, for so far observers have failed to find any relationship between the spread of this disease and factors which are commonly operative in disseminating many infectious diseases, namely: contamination of food or water, crowding and insanitary environment. While poliomyelitis shows an enormously increased prevalence, mystery surrounds its origin and means of dissemination.

Is it possible there are factors concerned in the transmission of this disease which have hitherto remained unknown or on which slight emphasis has been placed? The purpose of this article is to show the mild contagiousness as well as virulent infectious character of epidemic poliomyelitis; to call attention to the fact that artificial propagation of the disease has been by inoculation only; to draw the inference that inoculation must be the common method of transmission of poliomyelitis, and to publish notes on the blood-sucking insect, cimex lectularis, referring to its probable agency in transmitting poliomyelitis from man to man.

Attention being called to these factors, will it not follow that scientific investigation will bring proof of such relationship, or refute it?

[1] Report of Committee on Methods of Control of Poliomyelitis, *Jour. Am. Med. Asso.*, Oct. 14, 1911, pages 1275-1278.

It has been difficult to account for the apparent caprice in selection of victims shown by epidemic poliomyelitis. All members of a family may have the disease, but more commonly only one child sickens; this has been seen to occur in all epidemics and repeatedly in each. Cases of poliomyelitis in hospitals, schools and institutions have rarely been followed by the development of other cases, while local epidemics have apparently demonstrated direct transmission from case to case or by the healthy intermediate carrier.

Satisfactory proof that susceptibility to poliomyelitis varies to any considerable extent is lacking (Frost). Although cases may vary greatly in severity, from the mildest case of the arrested type (arrested type, new classification, Manning), to the rapidly fatal 7-8-hour case, the personal reaction to the infection may be due to individual variation of eliminative function, or qualitative variation of the virus. No proof has been offered that any person is immune to this infection.

The contagious nature of poliomyelitis was supported by Wickman, who traced channels of contact from case to case throughout many small communities in Sweden. This theory has been supported by a majority of investigators of epidemics, including the writer, who announced her belief that the epidemic was transmitted from Scandinavia to the Port of New York and thence to Wisconsin in 1908 (Manning, Poliomyelitis in Wisconsin. *Wis. Med. Jour.*, April, 1909); finding at that time no other credible explanation of the spread of the plague.

By some agency poliomyelitis is rapidly disseminated in a community; it now appears less certain to the writer that this agency is contagion, for the following reasons:

1. The experimental production of the disease in monkeys is by inoculation.
2. Experimental transmission has never been induced where there was solution of continuity and therefore a possible inoculation can be ruled out.
3. Poliomyelitis artificially induced in monkeys has never been spontaneously transmitted to animals confined in the same cage or room.
4. The comparative rarity of multiple cases in families.
5. Acute cases of poliomyelitis introduced in wards of hospitals not followed by a secondary case.
6. Fitful character of the extension of the epidemic in the United States, evidenced most plainly by the lapse of three years between its appearance in New York City and Washington, D. C., two great cities only a few hours apart.
7. Frequent epidemics of poliomyelitis in animals preceding and coincidental with human poliomyelitis may indicate that man is not the essential host of this disease.

The infectious character of poliomyelitis has been proved by the experimental transmission of the disease from man to monkey through many series of generations.

The virulence of the infection has been shown to increase qualitatively in these experiments, the mortality rate varying from about 50% early in the series, to 100% late in the same series (Flexner. *Journal A. M. A.*, Sept. 24, 1910).

The successful artificial transmission of poliomyelitis was accomplished by the method of inoculation. The usual method has been by trephine and the direct inoculation of the brain with a triturate of nervous tissue from a victim of poliomyelitis. In all other methods employed for the experimental production of this disease, including inunction of the scarified nasal mucosa and fauces, as well as introduction of the virus by catheter into the digestive tract, there may have been a solution of continuity of the protective surfaces which would constitute an inoculatory atrium for the virus. It is questionable if poliomyelitis has ever been transmitted artificially when inoculation could be absolutely ruled out.

The mode of spontaneous production of poliomyelitis in man is unknown. Reasoning from the known method of artificial transmission of the disease, inoculation with virus, we may apprehend that inoculation with the blood of a case at the acute stage of the disease would not be without danger of communicating the disease. In support of this probability we must again refer to the wonderful series of experiments

carried on at Rockefeller Institute of Research. It was found: "The virus has been detected in the blood of the monkey, at the height of the acute disease." Flexner and Lewis (Flexner and Clark, 11th note. *Jour. A. M. A.*, Nov. 18, 1911).

The several points which indicate the presence of the necrobiot of poliomyelitis in the blood stream of its host during the pre-paralytic febrile stage of the disease are:

1. Virus found to be present in the monkey during the acute stage (Flexner).
2. Presence of virus in bloodmaking organs.
3. Cutaneous eruptions of poliomyelitis. Skin rashes of poliomyelitis indicate cutaneous reaction to local presence of invading organism by the blood stream. As bacillus typhosus was recovered from a rose-spot, we may expect to recover necrobiot of poliomyelitis from cutaneous lesions.
4. Specific immune bodies found in the blood serum of arrested cases of poliomyelitis.

(Frost and Anderson. Abortive cases of Poliomyelitis. *Jour. A. M. A.*, March 4, 1911.)

The direct inoculation of poliomyelitis from man to man remains unproved, although transmission from person to person has been frequently observed.

The indirect inoculation of man from a human host with any frequency could take place only by the intermediation of a blood-sucking insect. Analogous examples of such transmission are those of the plasmodium malariæ free in the bloodstream, and the filterable virus of yellow fever, which are both transmitted from man to man by inoculation by the mosquito.

To maintain that poliomyelitis could be transmitted by a blood-sucking insect it would be necessary to prove that:

a. The virus of poliomyelitis permeated the bloodstream of the host during some portion of the attack, which we have just shown above to be true.

b. "Any insect to merit consideration as an obligatory factor in the transmission of poliomyelitis must be of almost world-wide distribution and perennial prevalence, for poliomyelitis has occurred in all latitudes from Australia to Canada, and while epidemics have been confined almost exclusively to the warm months, scattered cases have been reported in the United States in every month of the year." (Frost. Field Investigation of Poliomyelitis, Public Health Report No. 55.)

Of the blood-sucking insects which are commonly known in the United States, the mosquito, louse, bedbug, flea and tick, the mosquito, flea and tick are ruled out as they are distinctly annual and seasonal in the North Temperate Zone of North America, where epidemics of poliomyelitis have been most prevalent. The family of pediculi can also be ruled out as, unlike the mosquito and bedbug, they do not inject a blood-ferment while withdrawing blood of the host. They are also much less frequently encountered in ordinary American life than the other two pests, as personal cleanliness disbars their existence.

The bedbug, cimex lectularis, is the blood-sucker who conforms to the requirements laid down by Dr. Frost, and to other requirements which an insect must fulfil to "merit consideration as an obligatory factor in the transmission of poliomyelitis."

We will take up these requirements one at a time in a questionaire, and observe how closely cimex lectularis merits such consideration:

Cimex Lectularis.

Distribution? World wide.

Perennial? In artificially warmed domicile of any sort, and mild climates.

Seasonal increase in numbers? Multiplies enormously in summer months.

Increased in numbers by modern living? Steam and furnace heated tenements and lodging houses are choice breeding places for cimex.

Habitat? The domicile of man: beds, box-beds, folding beds, bedding; clothing; crevices about house; partitions of wood; chimneys.

May infest locality? Yes, tenements, hotels, stations, upholstered car seats and furniture, and generally insanitary homes, summer camps, and waterclosets.

Food? The blood of man; a blood-sucking parasite.

Preferred subject? The young child; the red-blooded healthy adult.

Transmitted by human carrier? With great frequency, especially in summer, due to increase in numbers and travel.

Easy transmission from bed of sickness? Any visitor whose clothing comes in contact with bedding may acquire one or more if present.

Comparatively even distribution among social strata? Present day methods of transportation might transmit cimex to any dressing room however exquisite, and all the well-to-do are not cleanly, while many of the poor are unavailably clean when juxtaposed with the unsanitary.

Children more frequently attacked than women? The democratic child frequently acquires cimex as well as 'language' from an insanitary associate.

Men more frequently attacked than women? Men acquire cimex in many public places which women rarely frequent.

The bedbug has long been tolerated, as the mosquito and septic fly were until recently, as a disgusting but harmless nuisance, yet he and his kind seem to have wakened suspicion as to their harmlessness many years ago, for Columella in the century before the Christian era, wrote of "insects armed with stings, and pestilent * * * creeping things from which came obscure diseases."

Dr. Lovett in investigating 150 cases of poliomyelitis in the Massachusetts epidemic of 1909, found cimex lectularis present in 31 homes of the 142 families represented; that is to say 20% of the 150 cases were known to have been exposed to attacks of cimex. Had these 142 families composed a small community, it is conceivable, each of the 150 cases might have been so bitten. (Lovett. Poliomyelitis, in *Mass. Bul. State Board*, June, 1910.)

The possibility of direct transmission of poliomyelitis from the acute case to any person entering the patient's room by inoculation from a bedbug which has been feeding on the patient is apparent. Such transmission through unknown agency is often reported, and the following case is suggestive in this connection:

New York Hospital for Deformities and Joint Diseases, Poliomyelitis Clinic. S. schoolgirl, aged 9 years; onset May 17th; two days before onset visited a playmate ill with poliomyelitis, in bed and paralyzed; S. was reproved by her sister for eating food which was on the bed of the sick girl, and by her mother for the same reason when she returned home. Attack, high fever, twitching, symptoms of ptomaine poisoning, general spastic condition, succeeded by paralysis from hips down, with paresis of upper extremities.

The well known habit of the bedbug of crawling from a bed to the clothing of any person coming in contact with the draperies, would account for the transmission of this disease by a third party who was and remained a healthy carrier. The agency of cimex offers a possible solution of the transmission of poliomyelitis in this record, excerpted from Dr. John Armstrong's study of an epidemic of 17 cases in a small community in Minnesota:

D. W. female, aged 5 years; onset August 6, 1909; August 7th, paralysis of right lower leg.

August 24th, this child was visited by her grandmother, who on August 26th went to visit another grandchild, residing in a town in which no poliomyelitis had developed. A third grandchild was temporarily at the home of the second. The third child became ill, developing a paralysis August 28th. On August 30th the second grandchild became ill and also developed a paralysis. Is it possible (Dr. Armstrong inquires) the grandmother carried the infection and transmitted it to the second and third child? (Armstrong. Poliomyelitis. *Pediatrics*, August, 1910.)

It would be difficult to prove the migration of cimex from the sick child to the well grandmother, but that such migration takes place I have recently had proof:

The evening of January 28, 1912, returning from Atlantic City on the Pennsylvania Railroad, we transferred to the Hudson Tube at Manhattan Transfer. The coaches are the last word in safe and sanitary construction, being made throughout

of steel and concrete. Seats extend lengthwise of the coach. Across from our party sat a small family group of the immigrant class. The mother, a robust creature of 20 years, held a small, puny infant, in marked contrast to her own buxom appearance. The man, a well-built young male, sat limp and pallid, with his emaciated hands crossed feebly on his overcoat. There were several bags disposed about them, and one behind the man's feet.

While speculating as to the probable illness which had so depleted this young foreigner, my eye was caught by an insect which crawled out on the floor from under this bag. It was a fair-sized bedbug, and crawled somewhat rapidly, but with the lurching gait of the distended bug. It advanced across the aisle several inches and returned as fast to shelter when some one passed down the aisle. The coaches are brilliantly electrified and I had no difficulty in watching the maneuvers of this pest. Three times the bug essayed crossing the aisle, and each time returned to the shelter of the bag, as people entered the coach at stations. The fourth trip cimex came directly across the aisle; when within three inches of the clothing of two ladies, I crushed him with the toe of my shoe; the blood with which he was distended made a mark on the smooth concrete floor three-fourths of an inch in length, and the characteristic odor of cimex diffused.

The two notable facts of this migration are that:

1. Cimex was definitely migrating from sick to well.
2. This migration was taking place in mid-winter.

The following suggestive case was recently reported by Dr. Spiller, Professor of Neuropathology, University of Pennsylvania:

"In another case of epidemic poliomyelitis, seen with Dr. W. B. Stewart, of Atlantic City, a bite of an insect produced quite a severe sore on the foot, and this was followed in a few days by paralysis. Whether an etiologic relation can be attributed to this bite or not is uncertain."

(Spiller. Diagnosis of Polio. *Penn. Med. Journal,* December, 1911.)

Professor Spiller has most kindly provided more extended notes of this very interesting case as follows:

"The patient was a girl, 14 years of age. She lived in Atlantic City over a store. Atlantic City is on an island. She had gone to the mainland on a picnic, and during the evening was bitten by some insect. The bite was on the foot, and within a few days the sore was sufficient for her to seek medical attention. The bite, as I recall, was on a part usually covered by a shoe, but probably she had on a low shoe. A few days after she was bitten she developed symptoms of poliomyelitis. The paralysis was extensive in all limbs. No case of poliomyelitis in Atlantic City or on the mainland was known at that time. I cannot attribute the poliomyelitis to the insect bite."

The history of this case is very suggestive. Cimex lectularis may be considered a permanent resident of tenements and insanitary lodging houses, and the floating population of Atlantic City doubtless fetch and carry many members of his family.

If the premise is granted that cimex may be the agency of transmission of poliomyelitis, we would expect to find the disease endemic in certain houses. Wickman noted such apparent endemicity, and reported it as proof of the contagious nature of poliomyelitis:

"The disease was not generally spread through the city (Stockholm), but was particularly localized in certain parts, so that in neighboring houses, groups of cases of three, five or seven, occurred. In one instance there occurred a case in one dwelling house from which the family removed on October 1st. A second case developed in this same house not long after the entrance of the family that moved into the rooms vacated by the first family." (Wickman.)

If cimex proves to be the usual agent in the transmission of poliomyelitis, there will be explained the reason for non-development of secondary cases of the disease in the well-ordered hospital or ward. The modern hospital, with fumigation and removal of patients' clothing, and frequent fumigation of wards and rooms does not harbor this pest. The unclean hospital ward, which harbored cimex might then be responsible for Type VIII, the rapidly fatal institutional disease form of the new classification of poliomyelitis. (Manning, Symptomatology and Reclassification of Types of Poliomyelitis. *American Jour. Obstetrics,* March-April, 1912.)

If cimex is the guilty agent of transmission, that would explain the fact that the epidemic of poliomyelitis in Nebraska was checked in mid-summer, by the establishment of isolation, quarantine and post-fumigation.

Unfumigated tenements, broken wall paper and wooden partitions may be alive with cimex. I recall delivering a woman, while externe at the Chicago Lying-in-Hospital; she was in a small room with just room to step between the bed and wooden partition; in the flickering light of the lamp I saw hundreds of these crawlers coming through the partition and down its walls.

Folding beds are a snare in this particular. Box beds built into the walls of the room, are part of the equipment in better class homes in Norway (*Homelife in Norway,* Daniels), which has again (the Summer of 1911), had an epidemic of 800 fresh cases of poliomyelitis. The built-in bed is as certain a trap for cimex, as the closed in sink and enclosed plumbing of all kinds form a home for roaches.

It was well said by Dr. Lovett that we knew for many years the organism of malaria and the pathological changes occurring in the disease, but we could not control malaria until we found that it entered the body through the agency of the mosquito.

Sandes and Long consider that lepra bacillus may be transmitted by cimex (*British Medical Journal,* Sept. 2, 1911). Relapsing fever and kal-azar are said to be transmitted by cimex rotundifolius. It is known that infectious organisms have remained alive a considerable period of time in the digestive tract of cimex.

To summarize:

1. The artificial propagation of poliomyelitis is by inoculation.
2. The method of spontaneous production of poliomyelitis in man being unknown, we are warranted in the assumption that it takes place by inoculation.
3. A blood-sucking insect is the known agent of transmission by inoculation of several acute epidemic infectious diseases: (ex. malaria and yellow fever—the mosquito. Relapsing fever and kala-azar—the bedbug. Suspected: pellagra—the sand-fly.)
4. Cimex lectularis, a blood-sucking insect, of world-wide distribution, perennial in habit, seasonal in increase, domiciled in the home, bedding and clothing of man, with the habit of migrating from sick to well, fulfills all requirements needed to explain the epidemiological peculiarities of poliomyelitis in man.

Although the case against cimex is not yet proved, in view of the above would it not be well for the public to be informed of the strong probability that the bedbug is the agent in transmission of poliomyelitis, and to accomplish the wholesale destruction of this omnipresent parasite before the Summer of 1912 opens, give to it in such advertisement the tentative appellation of cimex paralyticus?

Salvarsan in Paresis.

Eight selected cases of paresis in its early stages treated with salvarsan are reported by E. H. Trowbridge, St. Joseph, Mo. (*J. A. M. A.,* March 2). In all these cases the Wassermann test was positive and in the majority remained so during or after the treatment, the results of which were uniformly negative. The author says if these cases are to be taken as examples of the salvarsan treatment in paresis it would be more humane and life-saving to dispense with it. In his opinion there is only one way to stamp out paresis, and that is by prophylaxis.

THE MIGRAF—A MICROSCOPE-CAMERA.

ROBERT L. WATKINS, M. D.,
New York.

The migraf is a portable microscope and camera combined, designed especially for the easy observation of microscopic objects and for making a quick record for preservation. It weighs ten pounds, and requires for its operation an electric current of 110 volts, direct or alternating, such as is generally used for lighting.

Migraf in Use, showing Magnified Snail's Tongue on Observatory Mirror.

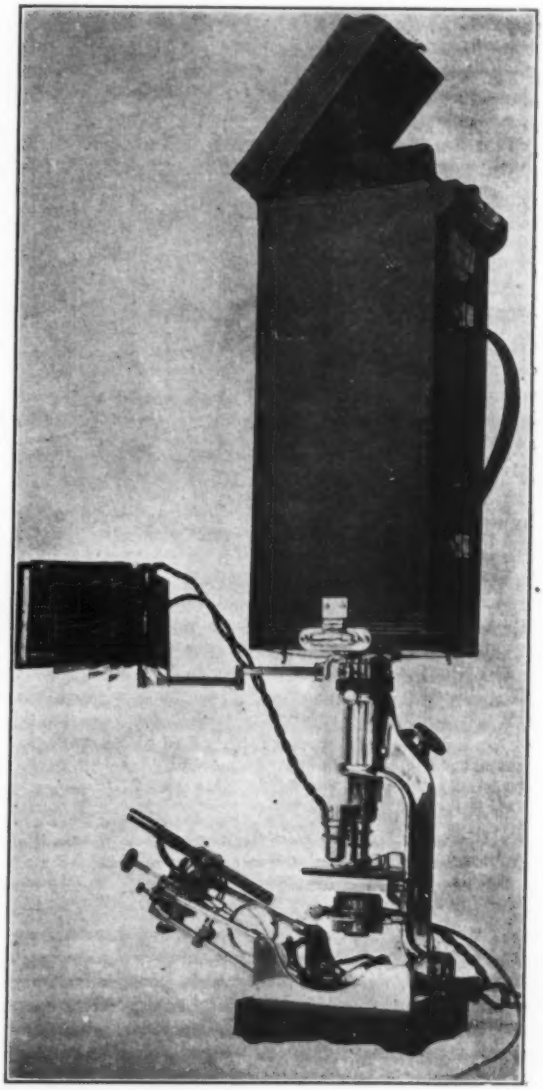
The migraf consists of four principal parts, a microscope, a camera and box in one, a rheostat, and a 1000 c.p. arc lamp.

The microscope is of the ordinary type, strong, light and compact to fit the case. The Zeiss, Bausch & Lomb, or Spencer objectives of any power, can be used interchangeably. About the upper part of the microscope tube is fitted a rectangular metal piece which does not interfere with using the microscope in the ordinary way, and about which fits the box - camera. This fitting is made very exact and strong so that no vibration can be transmitted when photographing. The base of the microscope extends down into a casing or box in the place of feet. This insures strength, as it is cast in one piece. Otherwise it resembles the ordinary microscope stand.

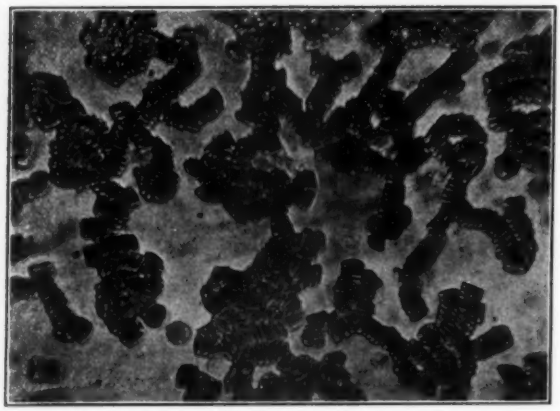
The box and camera are made of aluminum, leather covered. When closed the box fits about the base, and when opened—which is done by raising the box—it is fastened by two cam screws to the rectangular frame at the top of the microscope. The box when let down or closed, encloses everything, cords, plugs, plate holder, microscope, rheostat, etc. At the top of the camera is a ground glass and mirror combination for receiving the image after being magnified by the microscope. I call it the observatory, because for low power and rough high power work the operator can examine his object without tiring the eye and can look with both of them. One of the advantages of the migraf is its adaptability to the film pack which, I believe, I was the first to use in microscopic work. The films are light and compact for filing in a labeled envelope, although the glass plates can be used if desired.

The rheostat consists of five sheets of mica, 3x4 inches, wound with high resistance wire, which fold up like a book on hinges. In these hinges are holes so placed that pin tips from the cord can be slipped through and connect up each leaf either separately or five together when ready for use. Each leaf in this rheostat represents 200 c. p. This rheostat weighs only a few ounces and is probably the lightest one ever constructed. It has a resistance of about 12 ohms and when disconnected immediately cools. It folds and packs away in the base of the microscope. Without this rheostat this combination would be impossible; for other current controllers of this capacity weigh several pounds.

The arc lamp is a hand feed miniature made to fold up. Attached to the arm of the arc lamp is an 8 c. p. incandescent lamp which I designate as a pilot light. It can be switched into use for viewing objects with artificial light. When the arc goes on this pilot goes out automatically, and vice versa.



Side View of Migraf, showing Arc Lamp below and Rheostat swung out at back of Box.



BLOOD CELLS.

At the base of the stage is a shutter, to operate which is attached a wire antenna, so that a photograph can be snapped every few seconds if desired. The size of the negative, 3¼x4¼, is so designed for convenience in making use of the envelope system for keeping records.

The migraf took many years to construct in its present form and was intended originally for blood work, but experience has demonstrated it is indispensable to the pathologist, the bacteriologist, and to all research workers. The migraf is adjustable for dark field illumination and also for opaque objects. The general practitioner would, if he became familiar with it, find its uses to him not only in blood but in urine and sputum examinations. In all biological work, especially zoology, is the observatory examination serviceable and restful to the eyes. A photograph in this work filed away and properly numbered is invaluable. In the steel factory photo-micrographs are made constantly as a record for the engineer to determine the quality and strength of the steel. In the brewery the chemist wants a record of the yeast and germs present. The migraf is already in use there. In geological work many beautiful migrafs have been taken. Minerals photograph very easily and quickly. This instrument is of use wherever a microscope is used and this field is growing larger every day.

The Vacuum-Bottle Incubator.

H. S. Satterlee, New York (*J. A. M. A.*, March 2), corroborates the testimony of J. H. Schrup (*The Journal*, Jan. 27, 1912, p. 273), as to the value of the vacuum-bottle as a means of incubating bacterial cultures and narrates some experiments made to test this. For practical tests he made triplicate streak-cultures from the throats of diphtheria patients in the Willard Parker Hospital, placing one of each set in a quart vacuum-bottle, another in a pint bottle and a third, as control, in a laboratory incubator. All three were under the same conditions as regards the mode of incubation, freshness of specimen, etc. The following points were noted: site and character of the exudate, time of taking the culture, time of beginning incubation period, temperature of water in bottle and in the incubator at the beginning and end of incubation as well as the temperature of outside air at these times, time of ending the incubation period, macroscopic appearance of the growth and microscopic appearance of the stained specimen. The results were very nearly uniform. The growth in the vacuum-bottle tubes was generally more abundant and showed greater moisture, and in some of the positive cultures the Klebs-Loeffler bacilli seemed slightly larger and more numerous than in the control. This was explained by slightly higher temperature in the bottle-tubes and their being capped with rubber instead of paraffined cotton stops.

Current Orientation

ANESTHESIA AND ANESTHETICS.

Over 67 years ago Dr. Horace Wells, of Hartford, Conn., delivered an address before the class in surgery in Harvard Medical School on a method for making the body insensible to pain, so that surgical and dental operations could be performed painlessly.

While Wells' subsequent attempt to extract a tooth without discomfort to the patient under the influence of "exhilarating gas" was not eminently successful, it paved the way for the study of the subject and nearly two years after that exhibition, Morton demonstrated the value of ether for the first time. During the lapse of years the study of anesthesia has gone on intermittently, but progress has been marked.

The latest and apparently one of the most efficient methods of anesthesia is the use of a combination of nitrous-oxid gas into an admixture of oxygen and a minimal amount of vaporized ether.

F. J. Cotton, of Boston, has undertaken a study of the best method in a very scientific manner. He was disturbed over the number of cases showing postoperative complications, particularly after the use of ether, and in conjunction with his associate, W. M. Boothby, set out to discover the proper way of using the new combination, (*Surg. Gyn. and Obstet.* Feb., 1912).

He studied the methods of Crile, of Cleveland, Gwathmey, of New York and Gatch, of Baltimore. As a result of observing the history of over 2000 cases of Crile in which there was not one instance of postoperative complications in any way referable to the anesthetic, Cotton left Cleveland thoroughly convinced:—

(a) that nitrous oxid (with oxygen) is safer than ether, as ether is ordinarily given.

(b) that this anesthesia in some fashion lessens what we call "shock."

(c) that it is far preferable, from the patient's point of view, both because of the less degree of postoperative depression, and because of the less frequency and intensity of nausea, and the elimination of the distressing ether taste and smell that are so often complained of.

Cotton thereupon turned over to Boothby the task of devising a gas-oxygen machine:—

(a) with an apparatus in which rebreathing might be used to any desired extent, or dispensed with at will.

(b) with an apparatus that would give accurate control and registration of *quantity and pressure* of gas supply of both nitrous oxid and oxygen,

(c) with an apparatus that would be capable of giving a steady supply, not influenced by the intermittent freezing-up of valves,

(d) with adequate appliances for mixing, warming, and moistening the gases,

(e) with an apparatus not dependent for its efficiency upon a considerable positive pressure of the gases furnished for respiration,

(f) with provision for use of air with vaporized ether—that is, with an air pump, occasionally necessary when nitrous oxid and oxygen do not work quite well. Such a pump plays an important part with relation to intra-tracheal-insufflation anesthesia,—a mode of anesthesia destined to play a large role in the future.

As a result of considerable study Boothby invented a machine which the collaborators believe fulfills every requirement. They worked on the theory that nitrous oxid is a *specific anesthetic* (i e., asphyxia *should* have no part to play in the production and maintenance of unconsciousness). Nitrous oxid enough is given to produce unconsciousness. Oxygen enough is given with it (continuously and evenly) to secure proper aeration of the blood: the color of the face is the only guide.

Ether is to be used only to secure absolute relaxation and even breathing, when this end cannot be secured otherwise. Failure to obtain smooth respiration seems often to be accepted as inevitable in gas anesthesia, but it is not. An accented straining expiration is the warning sign that too much nitrous oxid is being given. By lessening the supply, with the addition of a little ether vapor, respiration becomes smooth and the gas-oxygen can be continued alone.

Boothby maintains that if the depth and rate of respirations be increased more nitrous oxid will be brought into contact with the blood in the alveolar capillaries; he further shows that this increase in total volume of respired gases will allow him to decrease the percentage of oxygen in the mixture and yet have a perfect oxygenation of the blood. He brings this increase about by rebreathing and by the addition of minute quantities of ether.

So we have (1) less nitrous oxid, (2) more ether, (3) rebreathing, by means of any of which manoeuvers we can promptly influence the character of respiration.

Properly given gas-oxygen gives a muscular relaxation that is less limp than occurs under ether, but is amply sufficient for even delicate abdominal operating.

The article in question amply describes the Boothby machine and gives an illustration of it. At first appearance it is formidable and complicated, but the explanation reduces it to a simple turning of valves.

In concluding this too brief abstract of a most interesting paper we can do no better than quote Boothby's findings:

1. Nitrous oxid is a true anesthetic, that is, its narcotic power is not due to asphyxiation. *Therefore any evidence or sign of asphyxiation* is not only unnecessary but *positively indicates,* as in anesthesia with other drugs, that *something is radically wrong.* This means that, after the induction stage is passed, the patient should have a healthy pink color.

2. Other symptoms aside from cyanosis must be looked for as an evidence of an excess of the drug. The patient may be receiving an excess of nitrous oxid, even if no cyanosis is present on account of the presence of oxygen.

3. The indications of an excess, which should be presumed to be dangerous, of nitrous oxid in the presence of oxygen are as yet only known in part. Those that I have observed are as follows:

a. *Labored respiration* with an accentuation of the *expiratory phase.* This labored expiration must be differentiated from a simply deepened respiration due to a slight increase of CO_2 from moderate rebreathing. (It may, in part, be due to an *excessive* increase in CO_2 caused by a too extreme rebreathing.)

b. *Cessation of respiration* will probably be found due to laryngeal or pharyngeal obstruction. As cyanosis in such an event supervenes with alarming rapidity no time should be lost in removing the mask and getting the tongue forward and administering oxygen. I have as yet never seen a cessation due to paralysis of the respiratory center, but am not prepared to say that it is impossible.

c. *Complete disappearance of reflexes and of muscular tonicity* for the present at least should not be permitted. The anesthesia should not be deepened so that the face takes on the death-like condition of complete relaxation seen in deep ether anesthesia. The eyes should never have that dangerous, death-like look which all experimental workers so often see in an exaggerated degree in deeply anesthetized animals. The corneal reflex should not disappear, in fact, the eyelids should quiver. In short, the patient should look natural both as to color and expression. Ordinarily speaking the relaxation should not be sufficiently complete to allow dropping back of the tongue, as is the rule with ether. However, by skillful administration of the anesthetic a sufficient relaxation of the abdominal muscles may be reached and maintained without loss of the reflexes of the face and throat.

d. *Vomiting* is more often a sign of a too deep anesthesia than of a too light condition. It is especially apt to occur when the anesthesia has been too much deepened by an excessive rebreathing; a single breath of fresh air on the appearance of the first signs of vomiting will often avoid it.

e. In patients readily susceptible to nitrous oxid there is no difficulty in getting into the blood a sufficient amount of the drug to produce a relaxed anesthesia and at the same time have sufficient oxygen to maintain a good color. In other patients that are not so easily put under its influence a greater amount must in some way be introduced into the circulation.

f. We have at our command two important methods of accomplishing this result:

(1) An increase in the volume and rate of respiration.

(2) An increase in the tension of the gases in the respired mixture.

(1) The increase in volume and rate of the respired mixture not only brings more nitrous oxid in contact with the blood in the alveolar capillaries but it also does the same with oxygen; therefore we can decrease the percentage of the oxygen in the mixture, thus making the mixture stronger, and at the same time get perfect oxygenation of the blood.

To increase the volume and rate of respiration we have at our command two respiratory stimulants:

(a) Carbon dioxid.

(b) Ether

a. Carbon dioxid is very important in the regulation of depth of respiratory movement as shown by Haldane and his co-workers.

By rebreathing a very slight increase in the percentage of CO_2 causes a marked increase in the depth of respiration. Many users from the time of Coleman (1868) have noted the advantage of rebreathing and have also made especial note of its economy; Boothby is the first to suggest that rebreathing is in many cases essential in order to get sufficient nitrous oxid into the circulation by increasing the volume of respired gases, so as to obtain a complete surgical anesthesia.

b. Ether likewise in small doses causes an increase in the depth and the rate of respiration as is well known by etherizers from watching the primary stage of ether anesthesia; Boothby finds that opening the ether valve for a minute will cause a deepened and more rapid respiration and that the relaxation that follows is due more to the deepened nitrous oxid narcosis than to the ether itself. Occasionally it is necessary to give sufficient ether in rebellious cases so that a true ether narcosis is added to that of the nitrous oxid; even to do this, only very small quantities are needed, so that the patient recovers very rapidly after removal of the mask.

(2) Paul Bert in 1878 showed conclusively the effect of increasing the tension of the gases. He administered a mixture of 80 parts nitrous oxid and 20 parts oxygen at a pressure increased by one-fourth above that of the atmosphere; the absorption of nitrous oxid was the same as if it were respired pure, while at the same time as much oxygen was absorbed as in breathing ordinary air. This method is practical only to a limited extent (about one per cent) when a mask is used.

From the surgical point of view the muscular action on the part of the patient in order to keep up respiration against this positive pressure interferes with the relaxation to such an extent as to make it an entirely undesirable method for surgical work; for dental work such pressure has been much used, and there is no reason why it should not be used, but apparently a good deal of trouble has resulted from assuming that this method of anesthesia would serve for the surgeon.

In view of the foregoing it is of interest to note the opinion of Allen of Boston, who affirms that this combination is not the safest anesthetic for all operations, (*J. A. M. A.*):

A large proportion of Hewitt's 14,000 cases, so often quoted, were dental and minor surgery operations calling for only

a brief use of the anesthetic. The same, he claims, is the case with Teter's statistics. There is no doubt that this combination is a very safe anesthetic for dentistry and minor operations, but during the prolonged administration required in major surgery the many and marked reflex changes in the patient's respiration and circulation make its use quite a different matter. He quotes in support of this view Thomas L. Bennett of New York, a leading surgical anesthetist. He also says he has had a fair amount of experience and says he has, in a number of cases, had alarming symptoms occurring suddenly and without warning and one death with this method. Bennett mentions four more as occurring within his knowledge. The symptoms are sudden failing respiration, dilating pupil and the corneal reflex becomes faint or disappears. In the light of the above facts nitrous-oxid and oxygen anesthesia cannot be considered a perfectly safe anesthetic, and this is the case even when the anesthetist is skilled. If a person had no special knowledge of anesthetics he would hardly be able to bring the patient under the influence of the anesthetic at all. Another important factor in contributing to the safety of gas and oxygen anesthesia is the proper preliminary medication of the patient with morphin and atropin and possibly scopolamin, and still another is the securing of a steady and even flow of both gases.

The danger of gas and oxygen anesthesia in surgery is that it is essentially too light a form of anesthesia to abolish the higher reflexes stimulated by the operation. This prevents the patient's evenly inhaling and exhaling the gases. Hence the value of the morphin and atropin. As regarding the freedom claimed from after-effects, careful distinction should be made between patients given simply gas and oxygen and those given just a little ether, which is apt to produce nausea, which may occur also with the simple combination. The author concludes as follows: "1. Writers quoting statistics designed to show the safety of gas and oxygen anesthesia should carefully separate the brief administrations of dentistry and minor surgery from the prolonged administrations of major surgery. 2. Anesthetic deaths occurring during the use of nitrous-oxid and oxygen in major surgery are not uncommon. 3. There are at the present time not enough statistics as to the safety of nitrous-oxid and oxygen in major surgery to show that it is as safe as ether or chloroform. 4. In order to insure a maximum of safety gas and oxygen should not be administered except by a skilled anesthetist equipped with the best available apparatus and patients should receive preliminary hypodermic medication. 5. In estimating the freedom from after-effects of gas and oxygen anesthesia in major surgery careful distinction must be made between cases receiving gas and oxygen only and those receiving gas and oxygen and "just a little ether." 6. When given with large amounts of ether, gas and oxygen has only a slight advantage over the nitrous oxid-ether sequence properly administered by the closed method.

Hyoscine-morphine anesthesia is giving better results as the combination is better understood. A hypodermatic injection of gr. 1-100 hyoscine hydrobromide, with gr. 1-150 atropine and gr. ¼ morphine used on a neurotic parturient patient had such a remarkable effect that Innes of London (*Practitioner*, Feb., 1912), has made use of this drug trio since. In the case in question as a result of the injection the patient slept between the pains, which were regular and resultful. The relief from pain was absolute.

Innes has used similar treatment in 50 cases, except that he has omitted the atropine. He advises against a second injection.

The effect on the woman is to make her talkative, but oblivious to most of the pain and the child is born with little knowledge on the part of the mother.

He says the drug fails to act on some women and aggravates the pain in others. In phlegmatic women it is almost certain to be of value, while the result is uncertain in neurotics.

In commenting on the effect of the injection on the child Innes says that in many cases where the injection has been given, and the child born without the aid of a general anesthetic, or of instruments, there is the most alarming comatose state of the child, with a cyanosed appearance and absolute disappearance of all reflexes, so that it seems to lie as if dead, except that the breathing is perfectly regular, and the heart-sounds steady and regular though weak. Artificial respiration and the ordinary methods adopted in such cases are quite without effect, and no effort to stimulate the child to take fluid gives any response. The pupil is not contracted, being always medium in size, but the reflexes here, in common with the others, are completely in abeyance. After a period varying from one to two hours the child, as a rule, is quite well, and there is no trouble thereafter. In the case recorded where the placenta had to be separated from the uterus, and in which the injection had had such a wonderful result, the child was in the stuporose condition for almost twelve hours, during all of which time it would receive no nutriment or fluid, and the condition altogether looked very serious, but at the end of that time it seemed as it were to awaken and was perfectly well after that.

In summing up Innes believes that in this drug we have a great help to the soothing of the parturient woman, and that with a minimum of risk to herself or her child. But if it so happens that the beneficial effect does not arrive with the first injection, we must on no account be tempted to repeat the dose, as such would in all probability be useless so far as the relief of pain is concerned, and would on the other hand have all the elements of disaster in it.

The use of scopolamin (hyoscin hydrobromid) and morphin is also recommended by Metzenbaum of Cleveland (*J. A. M. A.*, Jan. 20), for use before general anesthesia.

In discussing the administration of anesthetics he lays stress on four important facts, although many will not agree with him in certain of his findings:

1. Chloroform must be considered as a dangerous anesthetic even in the hands of an expert. 2. Ether is administered best by what he calls the "ether air anesthesia by the drop method," i. e., administering warm ether drop by drop on an open mask, the same as used in giving chloroform. By this method ether can be used more universally than any other known anesthetic. 3. From 1/200 to 1/100 gr. scopolamin combined with 1/8 to 1/4 gr. morphin should be given by mouth or hypodermatically one-half hour before general anesthesia, excepting in very young or elderly patients or in those with fever. They dull the sensibility so as to lessen the dangerous element of fear, and also the amount of the other anesthetics to be used. Their influence on respiration must be taken into account. Scopolamin, like atropin, prevents reflex stimuli coming through the superior laryngeal nerve or its branches from causing a sudden inhibitory stoppage of the heart, thus safeguarding the patient in operations on the throat and neck. 4. A skillful anesthetist is always desirable. The successful outcome of an operation depends largely on the care in the administration of the anesthetic, which can best be exercised by a skilled and experienced person. The anesthetic itself has some damaging action on the nervous system, as is pointed out by the author, ether, for example, as shown by Crile, having a greater effect in this way than nitrous oxid. Crile's experiments have further shown that painful impulses can be blocked from reaching the brain, and this combined anesthesia is a decided contribution to surgery and a potent means of preventing shock.

Interest in spinal anesthesia is apparently dying out. If we can believe McCardie, of England, this form of anesthesia is losing favor abroad, over 50 per cent. of surgeons having abandoned the method in Germany alone.

He thinks it is being used only when inhalation is con-

traindicated and local anesthesia out of the question (*Birmingham Med. Rev.*, Oct., 1911). He says the proportion of deaths is greater than in inhalation anesthesia, the immediate dangers as great, and the after effects often most severe.

The after effect from the inhalation method is vomiting; from spinal anesthesia headache, backache and an increase in temperature.

McCardie believes failures from the latter method are very frequent. An excessive dose is more certain to produce fatal results as it cannot be combated by mechanical and eliminative means. Zachrisson says spinal anesthesia will not meet Keen's idea of a perfect anesthesia, one which will safely abolish consciousness and in this McCardie agrees.

The importance of the proper administration of the anesthetic is being generally recognized and the day of leaving this task to an untrained person is rapidly disappearing. Not only should the administrator know exactly what to do and how and when to do it, but the surroundings should be such as to give the patient every opportunity. Gwathmey, of New York, is one of the best known anesthetists in the country. In a recent contribution on the various methods of anesthesia (*J. A. M. A.*, Feb. 17), he criticizes the average operating amphitheatre with its imperfect ventilation and says that the air should be forced in near the ceiling through gauze and drawn out near the floor. In addition to having the walls and ceiling wiped down with a weak bichlorid solution, the floor, whatever its composition, should always be cleaned with oiled sawdust to remove any particles of dust. He has long been the advocate of modified physiologic doses of morphin as a preparation for anesthesia and answers the objections usually made to such practice, and says that it is hardly fair for Bevan to ask us to relinquish the use of morphin on account of its effect on the pupils which are not used as a guide in nitrous-oxid and oxygen anesthesia. The objection that it augments the action of the anesthetic is, Gwathmey thinks, really the strongest argument in its favor, and he considers Bevan a little behind the times in his ideas as to the proper administration of anesthetics. The principal objection to withholding preliminary medication before an operation is the mental suffering of the patient. All patients, except possibly those under 8 or over 80, should have preliminary medication. It is much easier to anesthetize a patient half asleep than one with the reflexes all in rebellion. We should be prepared always to change or modify our anesthetic according to the needs of the case.

The first reported death under nitrous oxid and oxygen, as related by Dr. Lydston of Chicago, strikingly illustrates this fact, and he believes many unreported deaths have occurred under this method. It is not the innocuous method that the manufacturers of the apparatus and enthusiasts, like Gatch and Crile, would have us believe. The safest time to change to nitrous oxid and oxygen is at the close of the narcosis, and this is easy after ether administration. The tissues of the human body after an operation lasting an hour or more are in a condition that if evil effects are to follow the use of ether or chloroform they are apt to occur, and here is where nitrous oxid and oxygen should be introduced so cautiously and quietly that the surgeon need not be aware of the substitution. In the nitrous oxid and oxygen sequence, when used, the patient should be under the gas less than two minutes, and any excitement or struggling after the change will be due to faulty technic. As a general proposition, he says, ether and chloroform anesthesias are as safe and free from after-effects as the nitrous-oxid and oxygen method. Gwathmey does not believe in the drop method as a constant one. He uses it daily at some time in the anesthesia, but considers the vapor method with warm attenuated moist air its superior by far and superior to the nitrous-oxid and oxygen method. The anesthetist should have entire charge of the preliminary medication as well as the anesthetic administration. At the close of every operation the patient should have from 1 to 2 pints of warm saline with 1 ounce of glucose per rectum to relieve the thirst and fill out the veins. As the operation is closing or a little later, an enema of 3 to 6 ounces of warm olive oil should be given to restore the opsonic index. With these precautions and additions, Gwathmey says, not one patient in ten will have any nausea or vomiting or any unpleasant recollections of the work of the surgeon and his assistants.

Inhalation anesthesia seems to meet more requirements than any other method at this time, but the continued search of physicians for new and better things has led to the intravenous injection of physiological salt solution containing 5 per cent of ether. Kummel reported to the last Berlin Surgical Congress that he had successfully given 90 injections and Rood (*B. M. J.*, Oct. 21, 1911) has collected 21 cases in which the method has been used to advantage. In these cases Rood says there was no postoperative vomiting and the condition of the patients was invariably good after the operation, despite the fact that in some instances the patient was narcotized for more than three hours..

According to Rood's method the etherized salt solution was given until the patient was surgically anesthetic, when the infusion was discontinued, to be started again upon sign of recurring consciousness. An hour before the vein is opened a subcutaneous injection of gr. 1/6 morphine and gr. 1/100 scopolamine is given.

From the foregoing remarks we can see that progress is being made in the study of anesthesia and we may expect in the not distant future a standard method for various conditions which will approach the ideal.

An Opportunity for Young Physicians.

A board of commissioned medical officers will meet in Washington April 8 for the purpose of examining candidates for admission to the grade of assistant surgeon in the Public Health and Marine-Hospital Service. Candidates must be between 22 and 30 years of age, graduates of a reputable medical college, and must furnish testimonials from responsible persons as to their professional and moral character. The following is the usual order of the examinations: 1, Physical; 2, oral; 3, written; 4, clinical.

The examinations are chiefly in writing, and begin with a short autobiography of the candidate. The remainder of the written exercise consists of examination in the various branches of medicine, surgery and hygiene. The oral examination includes subjects of preliminary education, history, literature and natural sciences. The clinical examination is conducted at a hospital, and, when practicable, candidates are required to perform surgical operations on a cadaver. Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order as vacancies occur.

Upon appointment the young officers are, as a rule, first assigned to duty at one of the large hospitals, as at Boston, New York, New Orleans, Chicago, or San Francisco. After four years' service, assistant surgeons are entitled to examination for promotion to the grade of passed assistant surgeon. Promotion to the grade of surgeon is made according to seniority and after due examination, as vacancies occur in that grade. Assistant surgeons receive $1,600, passed assistant surgeons $2,000, and surgeons $2,500 a year. When quarters are not provided, commutation at the rate of $30, $40 and $50 a month, according to grade, is allowed. All grades above that of assistant surgeon receive longevity pay, 10 per cent. in addition to the regular salary for every five years' service up to 40 per cent. after twenty years' service.

Government Medical Leaders

SURGEON-GENERAL CHARLES F. STOKES, U. S. N.

The pride of Alma Mater is touched by the brave deeds of her sons. She zealously guards her own and never fails to encourage them by pointing out as examples those who have profited by her tutelage.

Columbia University has great reason to be proud of the career of one of her favored sons. To be elevated to the honorable and responsible position of Surgeon General of one's country's navy at the age of 47, especially when outranked by many older surgeons, occurs to few members of the medical profession. Occasion there is, therefore, for the alumni of Columbia to regard Charles F Stokes as one of the university's most brilliant and capable graduates.

Photo. Harris & Ewing
Washington, D. C.

Doctor Stokes' selection for the important appointment of Surgeon General of the Navy was made entirely on account of his unusual and conspicuously able record, and met with the approval of every one, both in the service and out. Joined to his broad professional experience, the Surgeon General brought to this new field of activity an unusual ability for organization and management which is so important a feature of his new work. In all the varied duties that have so far been assigned him, Surgeon General Stokes has always stood "facile primus." His great ability, joined to great dignity of character, his splendid bearing and sturdy fight for the right, particularly fit him for the duties as the head of what is to-day one of the largest and most important of our national professional departments. Every alumnus of his great Alma Mater cannot but look with just pride on this career which is being so splendidly rounded out and which reflects so much credit on Columbia University.

Although he has been but a little over two years in the office of Surgeon General, his influence for good has been widely felt, and many important reforms and far-reaching advances have already been inaugurated which bid fair to make the Medical Department of the U. S. Navy the peer of any similar service in the world.

Dr. Stokes was born in Brooklyn February 20, 1863. His preliminary education was begun at the Adelphi Academy, and completed at Brooklyn Polytechnic Institute in that city. He entered Columbia University (Medical Department) in 1880, but being under age at the completion of his course, could not graduate with his class of 1883. He was, however, appointed, by the late Dr. William T. Bull, ambulance surgeon in the Chambers Street Hospital, and was graduated with the class of 1884.

After a competitive examination against twenty men for one place, he took first honors and was appointed House Surgeon in Bellevue Hospital for 1884-1885. He was the first house surgeon appointed to Gouverneur Hospital, New York City (a part of the Bellevue Hospital), which he equipped and organized in 1885. This appointment was made by the Commissioners of Charities and Correction upon the recommendation of the medical board of Bellevue. He was visiting surgeon, out-patient department, New York Hospital, New York City, 1886-1889, and visiting surgeon, out-patient department, Bellevue Hospital, in 1887, and was lecturer to nurses, New York Training School for Nurses, 1886-1887, and quiz-master, New York City, 1887-1888. During this period Surgeon General Stokes laid the foundation for his life's professional work and gave early promise of that brilliant future which has been so fully achieved. The many friendships formed in these younger days have been lasting, and many cherish the memory of their work and association with him in the earlier days in New York.

Doctor Stokes was appointed to the Medical Corps of the Navy from the State of New York, and commissioned an Assistant Surgeon February 1, 1889. His first assignment to duty was on the U. S. S. "Minnesota" (then receiving ship at the Navy Yard, New York); following this he was attached to the U. S. S. "Iroquois," Pacific Station U. S. Naval Hospital Mare Island, Cal., and U. S. Naval Hospital, Yokohama, Japan, 1892-1895. He was commissioned a Passed Assistant Surgeon on February 1, 1892. Following his tour of duty at Yokohama, he was ordered to the examining board for surgeons, New York; ordered to duty as instructor in bacteriology, microscopy, etc., and operative surgery, in the Naval School of Instruction, New York, 1896. In the Spanish-American War he was senior operating surgeon on the ambulance ship "Solace," and equipped and organized the medical department of that vessel.

In 1899 he was the executive surgeon of the Naval Hospital at New York. That tour of duty was succeeded by duty as surgeon of the U. S. S. "Buffalo," during the Boxer troubles and Philippine insurrection, Asiatic Station; U. S. S. "New Orleans," Asiatic Station; U. S. S. "Zafiro," Asiatic Station; U. S. S. "Oregon," Pacific Station; U. S. S. "Solace," Asiatic and Pacific Stations; U. S. S. "Wisconsin," Pacific Station, and U. S. S. "Oregon," Asiatic Station.

Succeeding duty embraced the following: Professor of Surgery, Naval Medical School, 1903-1906; member examining board for surgeons, 1903-1906; additional special duty with President Roosevelt, 1903-1906; commanding the U. S. Naval Hospital, San Juan, P. R., 1906-1908; attending surgeon, Presbyterian Hospital, San Juan, P. R., 1906-1908, and President Insular School for Trained Nurses, Porto Rico, 1907. During this period, namely, May 31, 1900, he was commissioned a Surgeon.

He was the first medical officer to command a Naval Hospital Ship in time of peace. Doctor Stokes was serving in Porto Rico when he was recalled by the Navy Department and ordered in command of the U. S. S. "Relief" for service with the Atlantic Fleet on its "round-the-world cruise," in 1908.

After being relieved from the command of the "Relief," Doctor Stokes was assigned to duty as senior medical officer at the Naval Academy, and at the time of his appointment as Surgeon General of the Navy (February 5, 1910) was supervising surgeon of the Naval Medical School Hospital, in Washington, professor of surgery at the Naval Medical School, and member of the examining board for surgeons.

Doctor Stokes has attained distinction as the author of many monographs on military and general surgery. He is the author of chapters on "First-Aid," "Medical Department in Battle," and "Military Hygiene." His "Organization of the Medical Department of the Navy in Battle" is used in the fleet to-day. His latest contribution to professional literature is an admirable article on "Naval Surgery" in "Bryant and Buck's Surgery," which is the forerunner of a more pretentious and complete treatise on this subject. He has devised many valuable appliances, such as first-aid dressing, which, slightly modified, is used at present in the Army and Navy; a shell-wound packet for Navy; an apparatus for transferring wounded, direct from

ship to ship, without the use of boats; the splint-stretcher, now used in the Army and Navy as a litter; while he planned the Hospital Ship, which is accepted by the Bureau of Medicine and Surgery, Navy Department, with slight modifications, as its type.

In his professional career, Doctor Stokes has contributed much to the conservation of health. He gave the first course in clinical bacteriology in the Navy, at the same time taught operative surgery, and began the crusade against the common drinking cup on board ship as a means of disseminating disease. He was a pioneer in abdominal surgery in the Navy, devoting special attention to appendicitis and hernia; he has performed many unusual operations both in and out of the service.

BRIG.-GEN. GEORGE H. TORNEY, U. S. A.

The chief medical officer of the United States Army occupies the most important medico-military position of its kind in the world and it is important that the official shall be a leader in medicine. The present occupant has earned his right to the office, by his splendid work as a sanitarian. Gen. George H. Torney is to sanitary science what Gen. Sternberg was to bacteriology. An interesting feature of his career is that he was a naval surgeon for years before entering the Army.

General Torney was born in Baltimore, June 1, 1850, and was educated at the University of Virginia, from the medical department of which he was graduated in 1871. He was appointed an assistant surgeon in the United States Navy in November, 1871. He continued in the naval medical corps until June 18, 1875, by which time he had attained the grade of passed assistant surgeon. He entered the Army as an assistant surgeon in June, 1875, became a captain and assistant surgeon in June, 1880. His first duties as an officer of the Army medical department were performed at Fort Wood, N. Y., and at Key West, Fla.

General Torney has performed many important duties in the medical department and has been frequently the occasion of official commendation, especially during the war with Spain, when he was in command of the Army hospital ship Relief from May 4 to September 17, 1898, and later in command of the general hospital at San Francisco and in 1906 in charge of the public health and refugee sanitation in the period immediately following the San Francisco earthquake and fire.

The command of the Army hospital ship Relief involved duties which had not been required of any medical officer since the close of the civil war and the situation was fully met by General Torney, then a major. The Relief made its first trip to Cuba and brought back the seriously wounded of the fifth army corps and afterwards made two trips to Porto Rico, returning with the sick and wounded. In the four years prior to the war with Spain General Torney was the senior surgeon at the Military Academy at West Point.

General Funston, in an official report of the work performed by the Army during the days following the San Francisco earthquake, said: "Medical relief and sanitation was entrusted to Lieutenant Colonel George H. Torney, deputy surgeon general of the United States Army, who, in addition to his special duties in command of the Army general hospital at the Presidio, was serving as chief surgeon of the department of California. It was fortunate that an officer of Colonel Torney's ability was available for this work, which has been performed in a most satisfactory and able manner."

Dr. Torney became a lieutenant colonel in 1903, a colonel in 1908 and Surgeon General with the rank of brigadier general on January 14, 1909, succeeding General O'Reilley. Much of General Torney's reputation came from his remarkable work in San Francisco after the earthquake. Commenting on this the San Francisco *Examiner*, said in 1906:

"By the provisions of General Orders No. 37, General Funston performed, perhaps, the most important act of his administration of the affairs of the city of San Francisco; for by this order he placed the sanitary affairs of the city under the one officer of the United States Army who is the most competent to care for the greatest problem now confronting its courageous citizens. As commanding officer of the general hospital at the Presidio, Colonel George H. Torney has already made a name for himself which will always live in the memory of San Francisco. Who will ever forget the work he has done for humanity at that magnificent institution? When every other hospital in the city was threatened with destruction and patients were being carried out as fast as willing hands could care for them, Colonel Torney was receiving them at the general hospital as fast as automobiles, carriages, wagons, and ambulances could carry them to the Presidio. He was one of the first to realize the magnitude of the calamity and without waiting for orders from any one he notified the city authorities that the general hospital was at the disposal of its wounded and dying. It is indeed refreshing to see an officer act so quickly and courageously without the usual amount of red tape.

"As commanding officer of the hospital ship Relief during the Spanish war, Colonel Torney made a record for himself which stamped him as being one of the most efficient officers who has ever worn the uniform of the American Army. This hospital ship was entirely rebuilt and outfitted under the personal direction of Colonel Torney, and she is to-day regarded as the model hospital ship of the world. Since the Spanish war, Colonel Torney has commanded the large hospitals at Hot Springs, Ark., Manila, and the Presidio. He has rebuilt all of them and they are surpassed in point of equipment or efficiency by no civil or military hospital in existence. That the secretary of war should have placed him in command of these important institutions was alone sufficient to stamp him as a man of most unusual ability.

"During the past week we have seen enough of him to realize that the confidence reposed in him at Washington was well merited. He has heretofore been equal to the greatest emergency and nothing has been too large for him. His force for his new work has been organized, camps have been established, and medical officers placed in charge and every precaution taken to prevent the presence or spread of disease. With Colonel Torney in charge, San Francisco may well feel that its sanitary affairs are in the best of hands, and they are indeed fortunate in having at its disposal the services of such an able and illustrious officer as Colonel Torney, for, in addition to his great skill and executive acumen, he is, personally, the most lovable of men and is idolized by all those who have ever been so fortunate as to serve under his command. It may be said, without the slightest fear of contradiction, that he is the most beloved officer in the United States Army. Many heroes will come out of our calamity, but no star of glory will shine more brilliantly than does that of Colonel Torney, and we are proud to glory in it with him. For his work at the general hospital we are already indebted to him beyond measure."

SURGEON GENERAL RUPERT BLUE, U. S. P. H. AND M. H. S.

At no time in the history of human endeavor has individual merit played the part it does to-day. No longer does influence, not reinforced by real worth, obtain preferment. To the competent man belongs the position, is the slo gan of the hour.

Photo. by Harris & Ewing
Washington, D. C.

Never has this fact been better exemplified than in the case of Dr. Rupert Blue, who, after 19 years of conspicuously successful duty in the Public Health and Marine Hospital Service, was promoted over the heads of many older men to succeed the lamented and greatly admired Walter Wyman as Surgeon-General.

This action was indeed a tribute to a faithful officer, whose brilliant achievements in eradicating disease had marked him as one of medicine's truly great disciples.

President Taft, recognizing the fact that the important public health service must be directed by the wisest and sanest and most skilful man in the corps, forgot the bugbear of precedence and nominated the best man.

Dr. Blue was born in South Carolina in 1868. He was graduated from the University of Maryland in 1892 and became an interne in the Marine Hospital Service during the same year. In the following year he was commissioned assistant surgeon, and in 1897 promoted to the grade of Passed Assistant Surgeon, and in 1909 to the grade of Surgeon. He was commissioned Surgeon General of the Public Health and Marine Hospital Service Jan. 13, 1912.

In 1903 and 1904 Dr. Blue was in charge of the federal operations for the eradication of plague in San Francisco. In 1905 he took part in the suppression of yellow fever in New Orleans, and in 1907 was detailed as Director of Sanitation of the Jamestown Exposition. In 1907 plague reappeared in San Francisco and Dr. Blue was again placed in charge of the service work in California.

Dr. Blue recently spent some time in Europe studying preventive medicine as practiced there, and in 1910 graduated from the London School of Tropical Medicine. In May, 1910, he was detailed to represent the Public Health and Marine Hospital Service at the International Congress on Medicine and Hygiene at Buenos Ayres, and at this time took advantage of the opportunity to study possible routes by which plague and yellow fever might be imported into the United States from South America.

Dr. Blue's last detail before his appointment as Surgeon General was at Honolulu, where he had been sent to act in an advisory capacity to the Hawaiian Board of Health and other departments of the territorial government in the carrying out of a program inaugurated to make the sanitary conditions such that the possibility of the introduction of yellow fever or plague into the territory after the opening of the Panama Canal will be reduced to a minimum, and its spread, if introduced, impossible.

The Editors' Table in March

It is manifestly impossible to review in the confines of a short article all of the excellent editorial matter appearing in our many exchanges. Our only hope is to touch upon the more interesting subjects, for the purpose of directing the attention of the reader to those things in which he is most interested.

Since Dr. Sajous assumed the editorship of the *New York Medical Journal*, that publication is using signed editorials, and of late has published editorial statements from Drs. S. Solis Cohen, H. L. Shively, D. B. Delavan and B. C. Hirst. Cohen treats of heart cough. He finds many such cases, in some of which only muscular weakness is noticed. Sometimes there is dilatation. Sometimes valvular lesion and again muscular degeneration. Congestion in different regions, the stomach, liver and kidneys, often leads to a mistaken diagnosis. Cohen makes use of this condition to emphasize care in examination on the part of the physician and he cautions him not "to be a one-eyed man."

Sudhoff attacks the legend that syphilis was taken to Italy by Columbus' sailors from the West Indies. He asserts that an old manuscript recently discovered states the disease existed in Italy previous to 1493.

Pyorrhea alveolaris is not a disease in which the dentist alone is interested, says the editor in commenting on a thesis presented at the University of Dublin by Best, who sees a connection between pyorrhea and appendicitis, rheumatism, rheumatoid arthritis and gastro-intestinal infections. Among other conditions which he thinks may also be related to this far reaching disease are pernicious anemia, acute endocarditis and nephritis, septic laryngitis and tracheitis, chronic gastritis and sapremic symptoms.

Delevan presents a plan for the centralization of hospital laboratories, for the purpose of stimulating scientific progress, preventing unnecessary duplication and providing a maximum of efficiency at a minimum of cost. Theoretically the idea commends itself to us, but it needs to be worked out in more detail than Delevan presents to insure practical results.

The urgent demand for increased knowledge of obstetrics on the part of the young physician is the burden of Hirst's editorial, and he sees rays of hope through the different State boards.

The *Medical Record* takes up the subject of athletics in the Navy, treated in the February issue of the MEDICAL TIMES. It admits the "question of athletics and training as now conducted is a vexed one," and we are disappointed that it does not advance a theory for betterment.

The *Record* advocates placing the New York Quarantine under Federal control and in this it is joined by the *New York State Journal of Medicine*. It considers, among other topics "Baldness," "Strikes for Good Health" and "The Rationale of Acquired Tolerance to Drugs."

The *Journal of the A. M. A.* joins with Hirst in his plea for better education along obstetric lines. It believes that many of the cases now attended by untrained midwives should be made available for teaching purposes in the training of physicians and midwives.

The *Journal* says, as have numerous contributors to the MEDICAL TIMES in the February and March numbers, that "physical training, conducted as it is in our schools and colleges, as well as in our athletic clubs on a competitive basis, is not fulfilling its true mission." By a strange slip of the pen, quite unusual to the Association Journal, a recent report on athletics, which, at the instance of THE TIMES, has aroused an unusual amount of comment, is ascribed to the "Surgeon General of the United States Army," meaning, of course, Surgeon General Stokes of the Navy. The *Journal* wants our athletics to be so managed that we shall have "not a few

athletes with future usefulness impaired by over-training or over-straining on the field of contest, but a race of men with physiques abounding in endurance, energy and resilience." If our humble efforts in calling to the attention of the profession the dangers of our present system of athletic training result in the necessary reforms, we shall feel that our duty has been well done.

American Medicine, the editorial utterances of which are always timely and to the point, discusses vaccination and advises strong measures in dealing with anti-vaccinationists. It says: "Let us reach a stage wherein we may assert that if a man gets smallpox it is his own fault, and give him no sympathy—perhaps even punish him after recovery, for having become a burden to others." This is radical doctrine, but we may yet be compelled to adopt it.

In commenting on medical education it suggests that the curriculum be so arranged that men may go into the specialties as early as possible. While we believe some specialists should have some years of general practice, there are other special lines into which the physician might easily enter from the hospital.

The editor takes up the "mania of power" which is making itself so evident just now in the strife for the Presidential nomination. Dr. Lewis' characterization of this mania as "pathological egotism" is very apt and expressive. We have horrible examples in this country and other nations also suffer. Indeed the bacillus even penetrates the medical profession. We strongly disbelieve in long tenure of office, as the inveterate office holder becomes arrogant in the belief of his own indispensability. Rotation in office, like rotation of crops, never impoverishes the nation, the land or the people.

Wassermann's investigation into the realms of mouse cancer attracts the attention of the *American Journal of Surgery,* which declares that this "is the most distinct advance made in cancer research" and that "it is another triumph of the theories and methods of this generation's greatest medical genius, Paul Ehrlich."

This journal, in common with nearly all medical publications, comments editorially on the life and work of Lord Lister and it also publishes some delightful personal reminiscences of Lister, from the facile pen of his first American pupil, the gifted Henry O. Marcy, of Boston.

Touching upon the use of aconite, the *Therapeutic Gazette* reports the interesting and rather startling results of an investigation by Price, of England, who has been studying the action of aconite upon the pulse rate in cases of cardiac diseases. Using aconitine, he states that the drug has no influence in slowing the pulse and he believes it is of little value. It is difficult for us, who have used this drug for this very purpose for so many years, to entirely accept Price's findings and in this the editor of the *Gazette* agrees. He believes that "aconite may not be able to slow the heart in the presence of dilatation and valvular disease, but may slow it in the presence of fever or nervous palpitation."

A Midwives' Training School.

The latest school of interest to the allied professions is a training school for midwives recently opened by Bellevue Hospital, New York. On East 26th street, a small hospital, with accommodations for 12 patients, has been established, and the school now has ten pupils. The organization closely follows that of a nurse's training school, and the course is for six months. There is also an out-patient service.

The pupils are taught housekeeping, cooking, cleaning, laundry work, hygiene, preparation for confinement, care of the mother and baby, etc.

The school is the first of its kind in America, and seven nationalities are represented among its students. Its future will be watched with interest.

Diet, Hygiene and Nursing

THE CENTRAL REGISTRY FOR NURSES.

NANCY E. CADMUS, R. N.
Superintendent of Manhattan Maternity and Dispensary.
New York.

Wherever we find a community of individuals engaged in any pursuit that turns their thoughts and energies into converging lines, organization is quite certain to follow sooner or later. Step by step the development of trained nursing has progressed in this country, until to-day it ranks among the professions, and, from the organization of the Superintendents of Training Schools Society, there has been a steady growth until we have to-day not only a national association, but an international affiliation.

As a natural outgrowth of the co-mingling of the members of the various organizations, the idea of centralizing in communities for the operation of nursing interests developed, and after many months of patient and painstaking work on the part of our representative women the nurses of New York County opened a central registry in this city in the summer of 1910. Its prospectus reads thus as to its objects:

First: "To furnish a clearing house for all nursing interests."

Second: "To enable physicians and others to obtain nurses for private duty and positions of all kinds by means of a central registry and directory."

This registry in no way conflicts with those controlled by hospitals or alumnæ associations, but, on the contrary, operates with them through affiliation, and nurses graduated from any reputable school are eligible to membership under given requirements. State registration is made a requirement in seeking membership, conformity to the laws governing like business enterprises is observed, and the co-operation of all who are interested in the development of better standards in the nursing profession is sought.

Some confusion has arisen because of the co-operation of the Young Women's Christian Association and the New York County Nurses' Association in the matter of organizing and maintaining a "clubhouse for nurses" developed along lines similar to those on which the former has done much helpful work in the past, and is doing still, for students and working women of many types. While the central registry at present rents its office of the Co-operative Committee which controls the "Central Club for Nurses," there all business relation to the Y. W. C. A. ends. Financially the central registry is not yet self-supporting, but is much nearer to being so than the most sanguine ventured to hope for in its beginning, and the interest and co-operation of all who may be expected to give time and thought to its welfare are most cordially invited. Last, but not least, the nurses of New York County hope to make this registry a convincing argument in favor of the desirability of the nursing profession being made responsible for its own interests, by making the central registry what its originators had in mind, namely, "a clearing house for all nursing interests" and a central directory where all who have occasion to consult it will recognize the completeness of the organization, and, in time, find in it a center of supply of all of the many demands of the public upon this profession in the highest and best sense as considered from both sides.

State Registration.

Bills for the registration of nurses have been introduced in the legislatures of New Jersey and Rhode Island, and vigorous efforts are being made by the nurses of those states to have the bills put upon the statute books. In Louisiana a similar bill will be introduced when the legislature sits next month.

The Physician's Library

Clinical Diagnosis. A Manual of Laboratory Methods.—By James Campbell Todd, M. D., Professor of Pathology, University of Colorado. Second edition, revised and enlarged; 469 pages, 164 text-illustrations and 13 colored plates. Cloth, $2.25 net. Philadelphia and London; W. B. Saunders Company; 1912.

The second edition of this useful book differs from the first in that many additions have been made. For example, it has new chapters on Bacteriologic Methods, and Preparation and Use of Vaccines. In the revision the first topics treated include Wright and Kinnicutt's method of counting blood-platelets; typhoid fever diagnosis technic by blood cultures; the Wassermann reaction for syphilis; Tsuchiya's modification of Esbach's test and the diagnosis of rabies by means of Frothingham's impression method. While the special worker along diagnostic lines would hardly find this book of benefit it is an excellent epitome of clinical diagnosis and as such is of value to the physician. As a student text book it is particularly good.

Surgery and Society.—By C. W. Saleeby, M. D. Fellow of the Obstetrical Society of Edinburgh, etc. 395 pages. Cloth, $2.50 net. New York; Moffatt, Yard & Co.; 1912.

This book is timely, on account of the discussion of Lord Lister's life work, occasioned by his lamented demise. It discusses in the author's delightful manner, the history of Listerism, from the date of the discovery of anesthesia, through its early career, and its final acceptance by the medical world, up to the present. It is a clear, comprehensive presentation of the salient features of the endeavors of one of the world's greatest benefactors. As a eugenist, Saleeby believes the twentieth century will be a eugenic century and that it will be brought about by Listerism, which will abolish puerperal fever and one-third of the blindness of the world, and that indirectly the rate of infant mortality will be so reduced that modern civilization will be safeguarded.

The author pays fitting tribute to the progenitor of antiseptic surgery.

Principles of Human Nutrition.—By W. H. Jordan, Director of the New York Agricultural Experiment Station. 450 pages. Cloth, $1.75 net. New York; The Macmillan Company; 1912.

The author's statement that his purpose in preparing this book is to "show the adjustment of knowledge bearing on the nutrition of man to a rational system of nutrition without insisting upon adherence to technical details" has been well carried out. In an elemental manner Jordan takes up the digestion of food, the function of food compounds, food selection, various subjects having to do with diet and food preparation, sanitation and preparation. An instructive and valuable feature of the book is an extensive table showing the chemical composition of every kind of American food material. The author goes into this subject exhaustively. Persons interested in the subject of dietetics and health will do well to give this volume careful study.

Health and Medical Inspection of Schools.—By W. S. Cornell, M. D., Director of Medical Inspection of Public Schools in Philadelphia. 600 pages; 200 illustrations. Cloth, $3.00 net. Philadelphia; F. A. Davis Co.; 1912.

School medical inspection, properly carried out, is one of the best possible methods of protecting the public health. Disease checked at its inception fails under ordinary circumstances to become epidemic. From a sociological, humanitarian or business standpoint the demand for the careful inspection of school children by conscientious physicians is apparent. Incipient disease and mal-nutrition sap the energies of the little folk of the poor and undermine in an insidious way the future citizens of the republic. This book, based upon an examination of 35,000 children, will therefore, touch a chord of popular interest. Although scientific in a sense, it is still readily understandable by the educated layman and it would be a profitable investment for the Russell Sage Foundation, which is doing so much for child understanding and betterment, to present at least one copy of this volume to every school board in the country. It is a splendid exposition of the diseases and needs of our school children, written by an expert upon the subject.

Modern Methods in Nursing.—By Georgiana J. Sanders, formerly Superintendent of Nurses at the Massachusetts General Hospital, Boston. 12mo, 881 pages, with 228 illustrations. Cloth, $2.50 net. Philadelphia and London; W. B. Saunders Company; 1912.

Not only will the many nurse readers of THE MEDICAL TIMES find this book of positive value, but it will impress physicians as well as a delightful work to review. Some medical men overlook valuable practical points because they leave nursing strictly to the nurses. In many instances trained women are not at hand and the attendant must play nurse temporarily and with what sad results oftentimes.

Here is a treatise that covers every detail. The nurse who masters its contents will theoretically possess the wisdom of the nurse's Solomon, whoever he or she might be. The physician who absorbs its practical hints will be vastly more helpful to his patient and more useful to the community in which he practices. No physician has a right to tell a nurse to perform some task in which he is not competent to instruct her. This book will be to him a guide and teacher.

Microscopy, Bacteriology and Human Parasitology. By P. E. Archinard, A. M., M. D., Bacteriologist, Louisiana State Board of Health and City Board of Health, New Orleans. New (2d) edition, thoroughly revised. 12mo. 267 pages, with 100 engravings and 6 plates. Cloth, $1.00 net. *The Medical Epitome Series.* Philadelphia and New York; Lea & Febiger; 1912.

The salient features of microscopy and bacteriology are presented in this work in condensed form. The physician desiring to refresh his memory along these lines will do well to study its pages.

Physiology. A Manual for Students and Practitioners. By A. E. Guenther, Ph. D., Professor of Physiology in the University of Nebraska, and Theodore C. Guenther, M. D., Attending Physician, Norwegian Hospital, Brooklyn, N. Y. New (2d) edition, thoroughly revised. 12mo, 269 pages, illustrated. Cloth, $1.00 net. *The Medical Epitome Series.* Philadelphia and New York; Lea & Febiger; 1912.

A large amount of physiology is crowded into this little book. The story of the functions of the human body is told in a clear style, free from the verbiage that often comes with a more comprehensive work. It offers the tired physician an opportunity to relax by reading again of the wonders of man's make-up.

Blair's Pocket Therapeutics.—By Thomas S. Blair, M. D., Neurologist to Harrisburg, Pa., Hospital. 373 pages, special Bible paper; bound in limp leather; $2.00. Philadelphia; The Medical Council Company; 1911.

This useful little book discusses the various methods of treatment of different diseases, which are treated under 42 classifications. The dosage of drugs is appended. Various tables add to its usefulness. Latest works on practise and materia medica have been consulted, so that the reader is certain of obtaining up-to-date opinions upon every subject treated.

The Taylor Pocket Case Record.—By J. J. Taylor, M. D., 252 pages, tough bond paper; red limp leather; $1.00. Philadelphia; The Medical Council Company; 1912.

Physicians who are careful to keep bedside records will find this pocket record very complete. By it 120 cases can be accurately watched and for the purpose intended it is invaluable.

A Big Bill to Meet.

Congressman Jones—"I have a big bill to meet to-day."

Congressman Smith—"I did not know you were in debt."

Congressman Jones—"I'm not. I'm invited to the White House."